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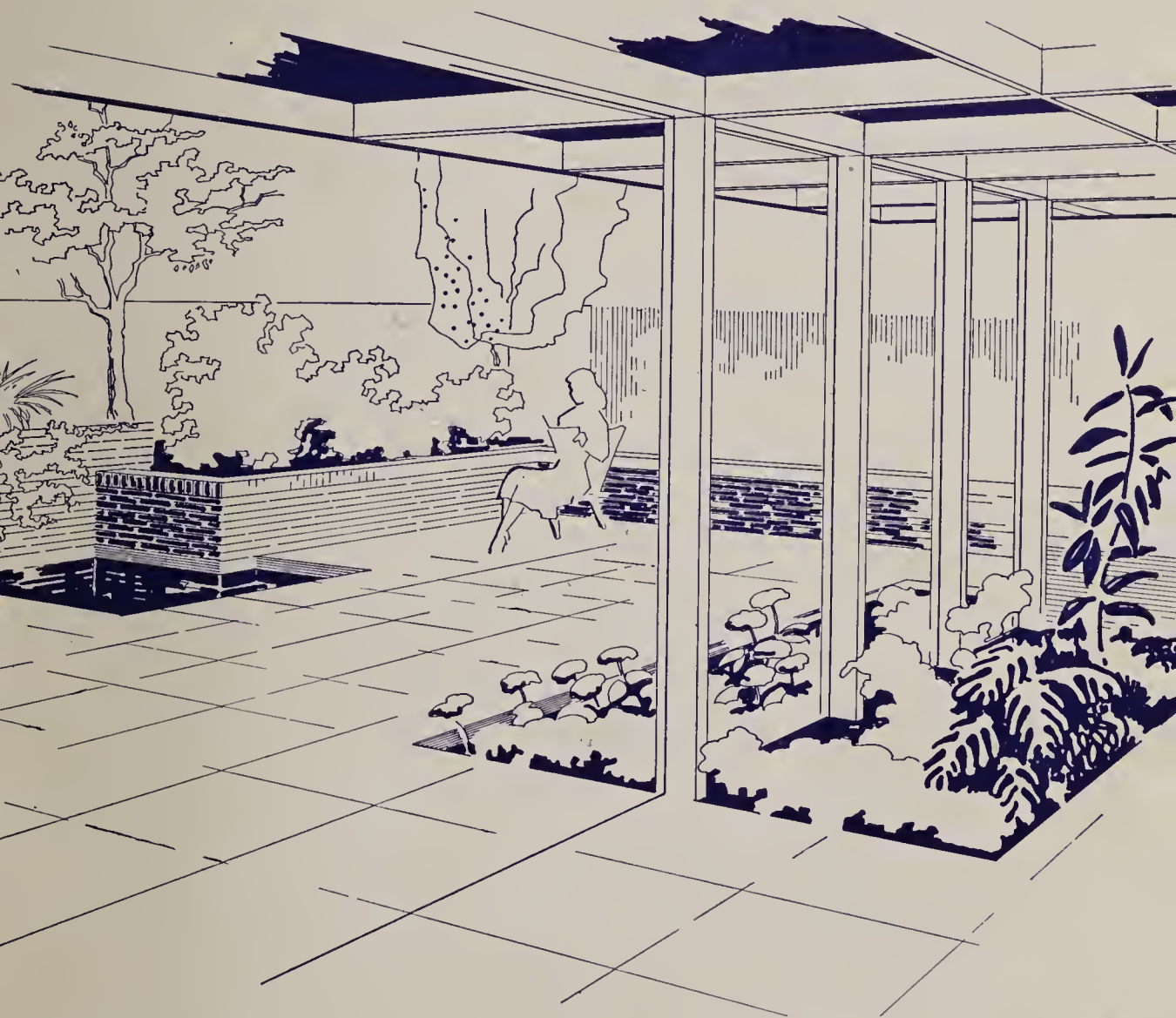
CITY PARK, DENVER 6, COLORADO

January, 1950

25 Cents

The Green Thumb

COLORADO'S GARDEN MAGAZINE



HOW TO PLAN YOUR GARDEN

ALL COLORADO AS OUR GARDEN

INTERESTING HORMONES

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The Green Thumb

Vol. 7

JANUARY 1950

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Drawing on cover by students of architecture in school of architecture and planning of Denver University.

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PLAN NOW—

A new year is beginning and there will be many new homes to be planted and old homes to remodel. The wise gardener plans now so that full attention may be given to the actual planting when the frost goes out of the ground in spring.

Decide on your needs now and then contact your favorite local nurseryman and ask him to help you work out the details of arrangement and recommend suitable plants to fill each requirement.

Enjoy the beautiful pictures in the attractive catalogs which come to you from all over the country but remember that many of the plants illustrated in these out-of-state catalogs may not be adapted to successful growth in Colorado. Your local nurseryman has had many years experience with adapted plants and can save you much money and disappointment by suggesting those things which are most likely to thrive here.

Many nurserymen can take you out to their fields of growing plants and show you just what each kind looks like. Then you may select the specimen which best fits your needs and finances. Plants which have been grown locally may usually be moved to your home with little risk of loss.

All good gardeners like to experiment with a few difficult or "impossible" things, but it is well to make the bulk of each planting with the tried and reliable things.

REMEMBER—

It's Not a Home 'Til It's Planted

See the September issue of "THE GREEN THUMB"
for a list of members of the

COLORADO NURSERYMEN'S ASSOCIATION



Colorado Forestry and Horticulture Association

Organized in 1884

"To preserve the natural beauty of Colorado; to protect the forests; to encourage proper maintenance and additional planting of trees, shrubs and gardens; to make available correct information regarding forestry, horticultural practices and plants best suited to the climate; and to coordinate the knowledge and experience of foresters, horticulturists and gardeners for their mutual benefit."

OFFICERS

President.....Mrs. John Evans
 Vice Presidents—Fred R. Johnson, Mrs. Robert M. Perry, Robert E. More, S. R. DeBoer, Mrs. J. Churchill Owen, Mrs. George H. Garrey
 Secretary.....Mrs. A. L. Barbour

January 1950 Schedule

Jan. 4—Wed., 2 p.m. Horticulture House. Start of series of 4 classes for home owners. "Planning your 1950 Garden". These classes conducted by Geo. W. Kelly, bringing in many experts to discuss particular points. Those with new or old gardens will learn much here of value to them.

Jan. 4—Wed., 7:45 p.m. Horticulture House. Beginning of third series of classes for commercial men. "General Principles of Landscape Design", by M. Walter Pesman, Landscape Architect.

Jan. 11—Wed., 7:45 p.m. Horticulture House. Commercial men's class, "Making a Plan, Surveys, Drawings." Ed Wallace and Ed Johnson.

Jan. 15—Sunday. Meet Horticulture House at 9 a.m. Snowshoe hike into the interesting Jones Pass area. Bring lunch, warm clothes and snowshoes or skis.

Jan. 18—Wed., 2 p.m. The second of series for home owners, "Choosing the plants to fit the plan". A discussion of appropriate trees, shrubs, vines, perennials, annuals and bulbs to use in Colorado.

Jan. 18—Wed., 7:45 p.m. Horticulture House. "Flower, Rock and Water Gardens", by Jack Harenberg. For commercial men.

Jan. 25—Wed., 7:45 p.m. Horticulture House. Commercial men's class, "Landscaping Public Places—Parks, Schools, Cemeteries, Institutions", S. R. DeBoer, M. W. Pesman, Paul Morrow and Maurice Marshall.

Below are given the present directors of this association. The term of those in the first section will expire this month. If you have any suggestions as to any of these which should be retained or new ones elected you should report to chairman of the nominating committee, Mrs. C. A. Barbour.

DIRECTORS

Term Expiring in January, 1950

J. Lee Deen.....Dean of Forestry School, Colorado A & M College
 Mrs. John Evans.....Home Gardener
 F. Herbert Gates.....Colorado State Entomologist
 Stanley H. Johnson.....Lawyer and Home Gardener
 Mrs. E. R. Kalmbach.....Former member of Herbarium staff, Univ. of Colorado
 Robert E. More.....Lawyer and Evergreen Specialist
 M. Walter Pesman.....Landscape Architect
 Scott Wilmore.....W. W. Wilmore Nurseries

Term Expiring in January, 1951

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 S. R. DeBoer.....Landscape Architect
 Mrs. George H. Garrey.....Home Gardener
 Fred R. Johnson.....Assistant Regional Forester, U. S. Forest Service
 Milton J. Keegan.....Lawyer
 Allen S. Peck.....Retired Forester
 Earl Phipps.....Simpson Seed & Floral Co.
 L. C. Shoemaker.....Retired Forester

Term Expiring in January, 1952

Mrs. A. L. Barbour.....City Forester
 Mrs. Helen Fowler.....Shadow Valley Gardens
 George W. Kelly.....Horticulturist, Editor
 Irvin J. McCrary.....Landscape Architect
 Mrs. Frank McLister.....Home Gardener
 Mrs. Leroy McWhinney.....Home Gardener
 Mrs. J. Churchill Owen.....Home Gardener
 Mrs. Robert M. Perry.....Home Gardener



PLAN BEFORE YOU PLANT

GEORGE W. KELLY

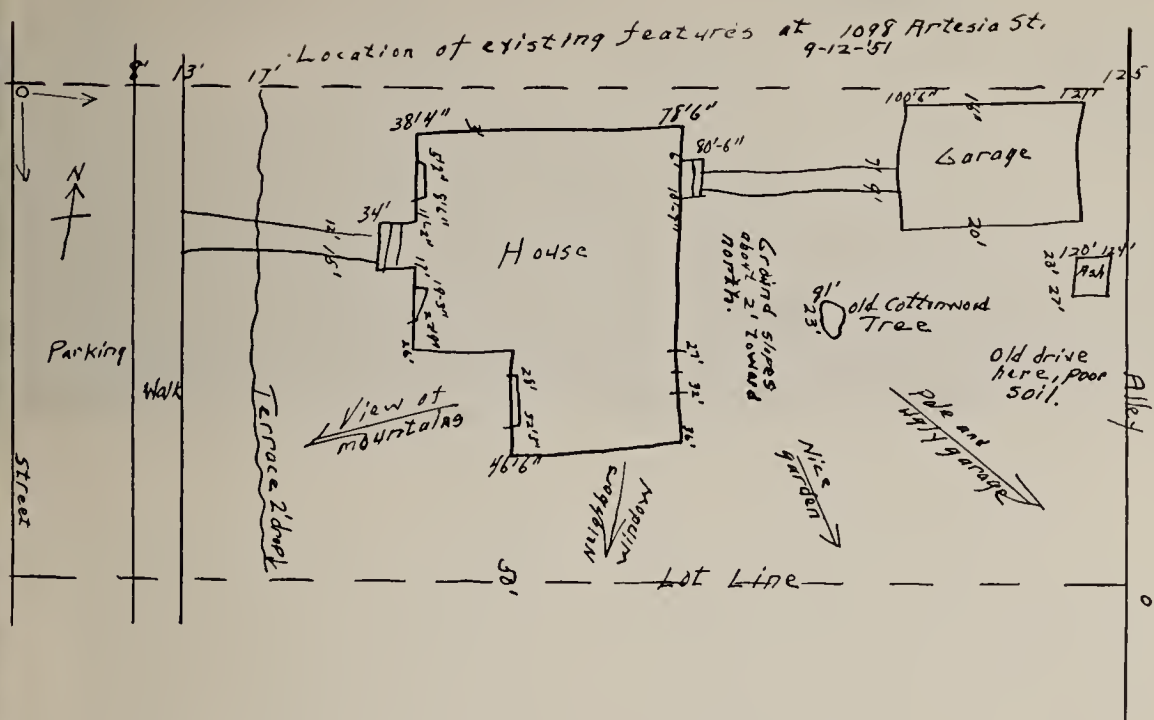
YOU have a new home with a house standing on an area of bare rough ground, or you have an old place which has never been properly planned or has been neglected for many years. You realize that the first step is a carefully worked out plan, but you are not sure how to go about it. Of course, you might go to a professional landscape architect or one of the local nurserymen who maintain a landscape planning service and turn the problem over to him, but for lack of finances (you are always broke when the house is completed) or because you want the fun of personally doing the work, you would like to make your own plan.

Here are given 10 logical steps which you should take in properly developing your plan. This procedure would work equally well if you needed to plan the landscape development of a home, a park, a commercial or public grounds.

Survey of Needs

1. First you should make a survey of the things desired in the finished grounds. To accomplish this you must consider the habits and customs of the people(you and your family) who will use these grounds. Do you spend much time at home? Do you entertain much and like to eat out doors? Do you love flowers? Do you like to work outdoors? Do the children or the dog need a playground? Do some members of the family have gardening or outdoor hobbies that should be provided for? Better give this careful thought and put the results down on paper so that you can refer to it later.

The list might include a rose garden, a dog yard, a shady nook with platform where the peas could be shelled and tea served, a pool, a snowball bush, a birch tree, a dry wall and a long border for the iris collection.



Survey of Existing Conditions

2. The next step would be to make a careful survey of what you have to work with. How big is your lot? What kind of soil do you have? What is the slope of the land? How much of this area will receive too much or not enough sun or wind? What are the immediate surroundings and what are the distant views?

Right here I would make a plan showing the existing conditions and draw it to scale on paper of some sort. I would draw in the house, the boundary lines, any walks, drives, ashpits, phone poles, neighbors' fences or other features that were present and must be worked with or around.

A simple way to get the data necessary for making this first basic plan is to start at one corner with a tape

line and measure the length and width of the lot marking the distance from this corner called "0" to the point opposite each feature necessary to include. At 6' you might be opposite the first side of the house, at 10' the first edge of the front porch, at 20' a telephone pole in the parking, at 35' the edge of a terrace and at 50' the lot line. Pick out a scale to use which will allow the greatest dimension of your grounds to fit on the size of paper available. For instance if your lot is 135' overall and your paper is 20" long you could use a scale of 1" equals 8'. This would make your drawing $16\frac{7}{8}$ " long allowing for margin on a 20" paper. If you can get graph paper the squares will be already marked off and will eliminate some measuring and figuring.





Dominating Theme

3. After you have these two sets of facts—what you want and what you have—then you can begin to pare down or fit the first list to the second. Before doing any work on this fitting in of desirable features it might be well to decide what will be the dominating theme or character of the whole development. Will it be most appropriate to make it ultra-modern, naturalistic, formal; or be influenced by some foreign or ancient design. Look around you as you drive home tonight and notice that the most satisfying plantings are those which

conform to one scheme or theme throughout with all the parts fitting together in unity. Landscape architecture is an art comparable to others like painting, sculpture, music or architecture, but landscape architects work with living plants and the pictures created are living pictures which must have continual care to remain as originally created. All the basic rules of other forms of art apply here, such as unity, balance, simplicity, scale, lines, proportion, rhythm, texture and color. The best result is obtained when everything is arranged for the greatest amount of beauty at the same time retaining maximum utility.

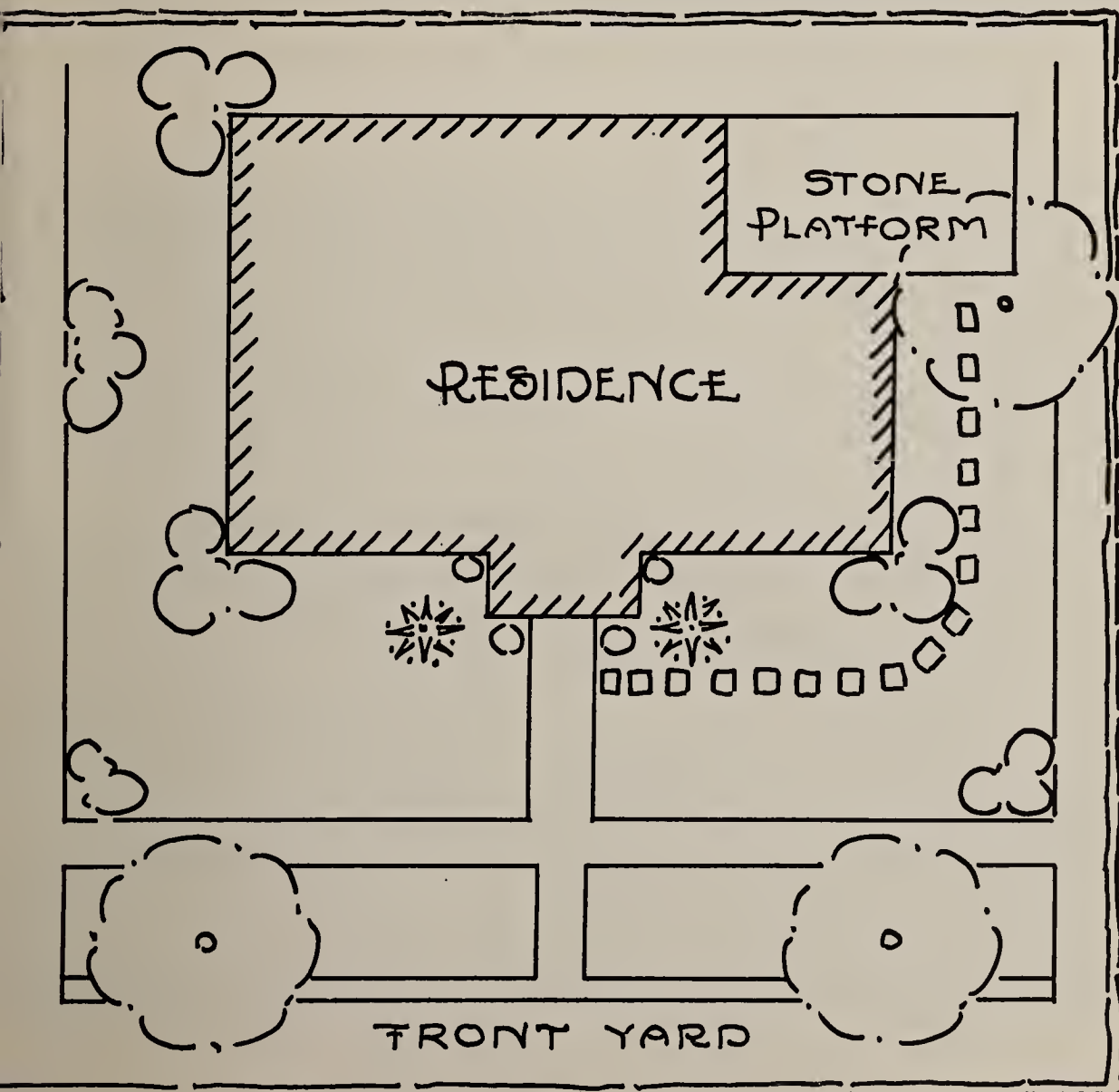


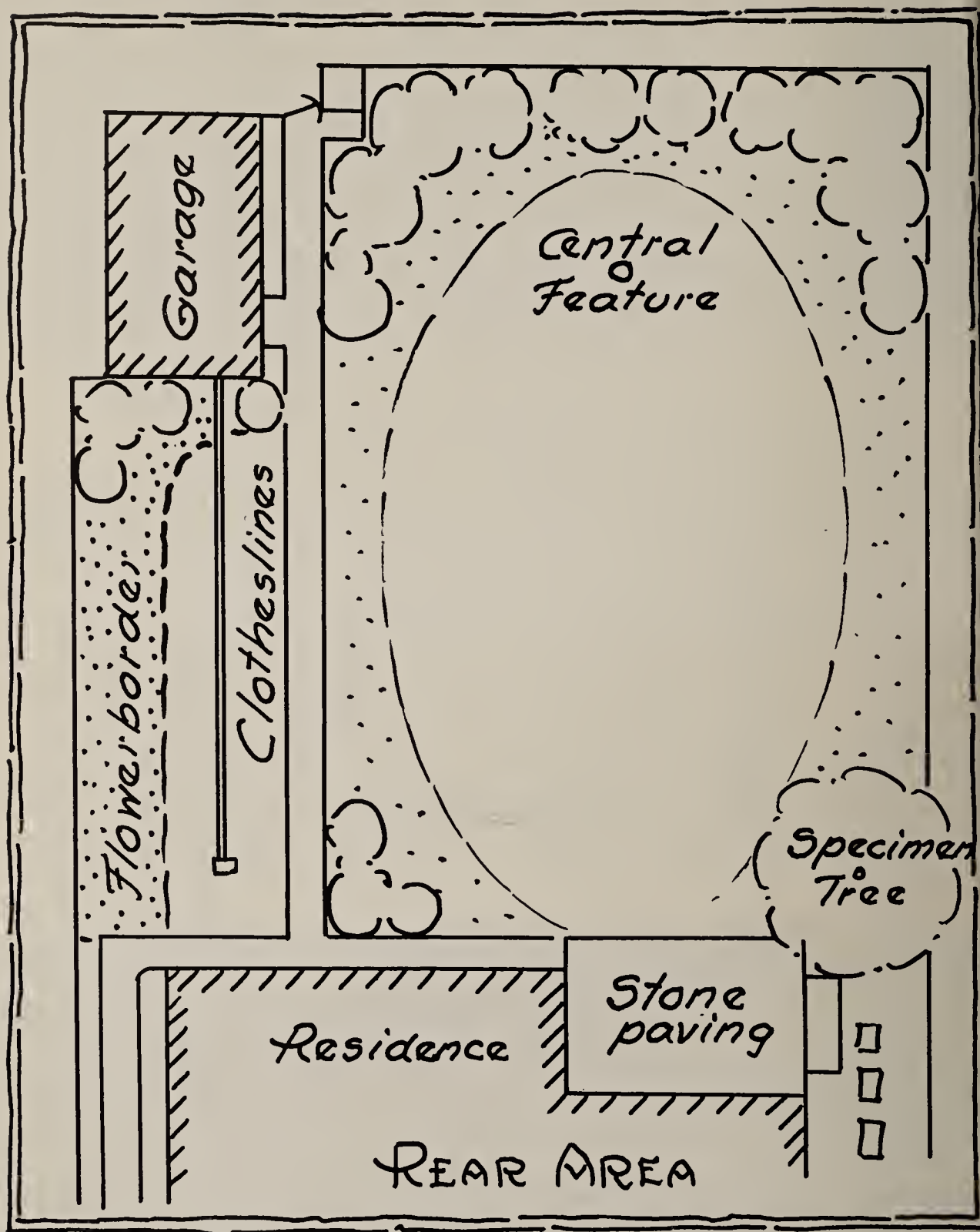
Principal Divisions

4. The next move after the general idea of the development has been determined will be to roughly lay out the grounds into the principal divisions as to their use. In most cases there will be three—the public area, that between the street and the house, once called the “front yard”; the service area, including drives, clothes yards, ashpits and such; and the garden area, which may be developed to suit the requirements and pleasure of the family. In the more modern designing of homes there is increasingly more attention paid to arranging the

rooms of the house and the outdoor “rooms” to fit together as to their uses, that is the service area and entrances adjoining the kitchen and the garden area easily entered from the living rooms. In many modern developments the “front” room and “front” yard are not adjoining the street at all, but face the most desirable view. Likewise, the “front” and “back” doors may both be on the same side of the house, adjoining the street, leaving undisturbed a larger garden area on the opposite side.

When these principal areas have





Drawings on this and preceding page by M. Walter Perman, to illustrate a simple basic layout for a small yard.

been roughed in, the next move would be to locate the drives, walks and definite outline of areas. This would immediately give an idea of the restric-

tions and boundaries of spaces available and enable you to proceed with rather definite plans for the various features wanted.

Main Features

5. In planning the further details it might be well to have a check list to remind you of the things that should be considered.

- a. Shade and windbreak.
- b. Background and foreground.
- c. Framing or hiding views.
- d. Softening severe lines.
- e. Extending important lines.
- f. Adding to the beauty and utility.
- g. Providing color interest year 'round.
- h. Attracting birds.
- i. Marking boundaries and giving seclusion.
- j. Providing for hobbies and other uses.



Beautiful little garden nook in rear of Mrs. Henry P. Lowe's home at Central Citw.



A very effective garden designed by M. Walter Pesman, for Col. and Mrs. Bonnet, on South Fillmore St.



Good Design

6. In the individual designing of these features and in their association with each other it should be constantly kept in mind that there should be definite rules for their proportion, scale, texture, lines, masses, colors and balance. These are some of the things that make a planting satisfying if they are properly considered. The same features may be arranged in the same yard so that they all contribute to a satisfying picture or they may be just so many independent features like canned goods on a store shelf.



Materials to Use

7. Up to now you have been concerned with effects wanted. Now you should begin to consider more the materials to create these effects. The trees, evergreens, shrubs, perennials, annuals, bulbs, grasses, and articles of stone, wood and metal.

Since trees are the backbone of any planting, I would first consider them. Their first use might be for shade—shade for the house from the heat of the sun in the southwest and shade for the recreation area in the garden. Then there should be considered the importance of properly located trees



to give background to the house and grounds, and trees to frame it from the important (approach) view.

If trees are the backbone of a planting then shrubs would be the flesh and muscle. Their uses are many and varied. The first consideration might be their use as screens for objectional views — the alley, the neighbor's clothesline or kitchen window, the vacant lot next door or your own ash-pit. Then they might be used to mark boundaries of areas, to soften severe architectural lines, especially as a foundation planting. They might be used to secure seclusion for certain parts of the garden or to supply fruit for the birds or just for their own beauty of flower, fruit or leaf.

Then the perennials, annuals and



bulbs would put the covering skin on the whole picture and supply many of the finishing touches of beauty. The lawn would supply the foreground carpet or a background for flower beds and other small features.

Special forms of plants should be considered for appropriate places—hedges, espallier trees, tall slim trees, vines or ground covers. The inanimate materials should be considered for their part in the whole picture—stone for walls, platforms, rockeries, walks, steps and fireplaces, and brick for these same uses or the construction of garden house or pergola. There might be many places where wood would be used—for fences, gates, trellises, seats or screens. Water might be used to create reflection pools, lily and fish pools, fountains and naturalistic streamways. Beds of specialized plants such as roses, iris, cacti or tulips might fit in the general scheme. Gar-



dens may be judged roughly for the excellence of three qualities—the design, the materials used to carry out this design and the later maintenance. If the plan calls for a tall slim tree to screen a phone pole, then the tree which most nearly does this and fills other requirements of size, color, life, health and beauty should be selected. If a wall is needed it should be determined whether brick, wood, stone or metal would fit best in the design, be most economical and provide the greatest beauty. The kind of lawn grass should be selected which would best tolerate the particular amount of use, water and sunshine that it would be likely to receive. If a low shrub is appropriate for growing under a window, the kind should be chosen which will most nearly grow to the required size. Here is where you must either learn the habits of plants and qualities of other materials or depend on some dealer to advise you.

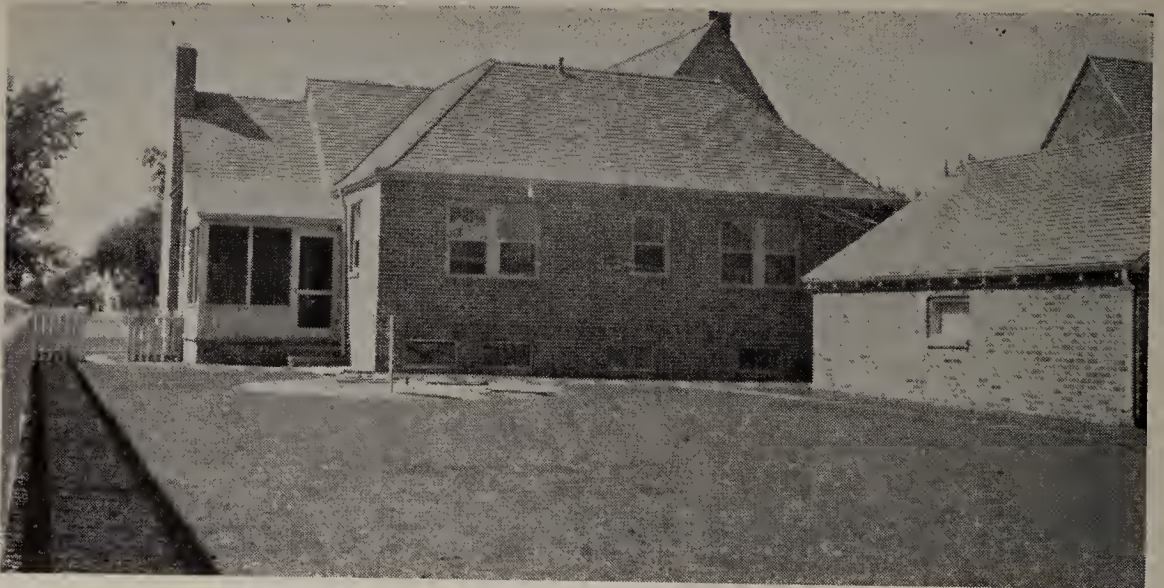
The Plan on Paper

8. With all the little details pretty well worked out in your mind it is time to begin to put them down on paper. This is necessary for several reasons; because you are liable to forget before time to carry out these plans, because you must draw the various features up to scale to be sure that they fit together or to be able to pass on your ideas for someone else to carry out. You may plan each separate part perfectly from your one point of view, but it is only when you can look down on a paper plan that you can visualize how these sep-

property and name of maker of the map.

The Plan on the Ground

9. Now you are ready to order the necessary materials and begin to put them into place when the proper season arrives. This can be a very interesting job. Before starting the actual planting or construction you should lay out the location of all necessary features on the ground to correspond with the specifications on the plan. Here you may use named and numbered stakes, outlines scratched on the soil or, if necessary, grade stakes. Some minor adjustments may



arate parts are going to fit together. It is much easier to move a large tree on paper, if it should be wrongly placed, than after it is actually planted in the ground. Blue prints, colored perspective drawings, elevations, and cross sections may often be desirable to thoroughly set down a permanent record of the features wanted. Make accurate measurements of materials and the spaces to be filled and enter these details on your plan, drawn to scale. For future usefulness every plan must include date, direction, location, scale of drawing, name of

be made at this time, but it is best to stick rather close to the accepted and previously worked out plan. As most contractors leave the grounds about a new building rather rough you should carefully work out grades and level the soil where needed, then prospect to discover any unsuitable soil, or litter. The soil should be improved by the addition of some form of humus or fertilizer and carefully cultivated before anything is planted. Remember that a penny saved here may cost you many dollars in later work, fertilizer and poor growth of plants,



for most grounds will not be disturbed, except for the surface, for many years to come.

Planting and Construction

10. Now you are ready to plant and this is a subject worthy of a separate story. Much of the effectiveness of the whole plan depends on getting the plants back into the ground in good healthy condition so that they may immediately begin to grow vigorously.

1. Survey of Needs.
2. Survey of Existing Conditions.
3. Dominating Theme.
4. Principal Divisions.
5. Main Features.
6. Good Design.
7. Materials to Use.
8. The Plan on Paper.
9. The Plan on the Ground.
10. Planting and Construction.



*Planting by highway department at entrance to Glenwood Springs, Colo.
Design and photo by M. Walter Pesman.*

ALL COLORADO

Extracts from a talk given by Carl Feiss at the annual dinner

Naturally landscaped highway near

ALL Colorado is our garden. The prairies are vast rolling lawns of wild grasses spangled with sunflowers. The forests are the base plantings for the mountain walls, and the warm, dark shrubbery for rock gardens whose infinite variety and incredible beauty attest the unequalled skill of the one Great Landscape Gardener. And there are many other examples of Nature's gardening competence in Colorado. The desert, the canyon and the mountain top are supreme tests of skill and taste. The forests shame the nurserymen from border to border, the whole state grows and blossoms and serves to feed either the mind or body of man from its varied crops. While we did not originate this garden, plant its





*Pinion trees planted by highway department at Pinion, Colo.
on highway north of Pueblo.*

S O U R G A R D E N

the Colorado Federation of Garden Clubs, October 24, 1949.

Springs, Colo. Photo by Chas. J. Ott.



fields and forests, select its flower seeds or prepare the soil, ours is now the maintenance for today and for the future. Having decided to live here we must assume this obligation for we do too careless damage with it now.

The passing of our great mining era is followed by changes too great and too rapid to detail here. The mule and wagon, the stage coach and narrow-gauge railroad are gone, and in their place great smooth ribbons of road sweep over the passes and through the canyons. The gold and silver rush is over, but the tourist rush is on. Again Colorado's landscape takes a beating. Our National Parks are overcrowded now. There are inadequate funds in the National Park and National Forest budgets to

handle what is happening and what will happen.

We have two kinds of tourists—our natives and our visitors. Our natives use our own rapidly growing cities as home base for trips into the hills. Our visitors from the hot prairies of the mid-west and Texas, the teeming cities of the south and east, come to "Cool, Colorful Colorado" for the peace and beauty which is as much fact as legend. The only trouble is that as a State we are not ready for what is happening to us.

It happened in the East—in Massachusetts, New York, Virginia, and every other state where mountain beauty is sought as a substitute for ugly city living. It happened in the northwest and in California—and it is happening here. It does not have to happen.

Where is our civic pride? Are we proud of our tourist towns? I would be sued for slander for giving my opinion of the appearance of Estes Park, Evergreen or Manitou. Think of the thousands of visitors a week to Colorado who see the miles of trash and ugly backs of buildings as they pass by in trains and along many of our roads. What about the approaches to Colorado Springs or Greeley or Grand Junction?

There is no city large or small that

can look at itself in a mirror without blushing. Your own private garden may be lovely, but is your city? A rose will continue to have fragrance in a garbage can, but its odor is not the predominant one.

Among the disappointments of the tourist is the lack of good resting or camping spots. Despite the fact that one third of our State is in public land ownership, we have almost no roadside parks or camp sites even in our most logical areas. All through the country, with Colorado one of the few exceptions, there are State roadside parks administered by the State Park System and the State Highway Department. We are the one State without a State Park System and one of the few in which no apparent interest in the problem exists in the Highway Department. In our prairie and desert areas on our main highways, the problem is particularly acute.

Colorado is our garden. The future of our State is in our own hands. No cataclysm of nature destroys God's own creation as we destroy it ourselves. The price of our growth and prosperity should not be the loss of our birthright. Quite the contrary; our growth and prosperity should enable us to create rather than destroy.

A prewar highway planting now becoming very effective. Commonly known as "Pesman Park", on highway 85-87 south of Littleton, Colo.



CONSIDER ALL THE VALUES

The proposed Echo Park Dam would create some economic values for Utah. What esthetic value would Colorado lose?

GEORGE W. KELLY

A BAG of wool might equal in weight that of a small piece of lead yet who could say that one was more valuable than the other. Are we justified in taking space in our garden to grow roses when we might grow a few more beans or carrots in the same space? The esthetic and economic values are measured by different yardsticks, yet who can say that one is more valuable than the other. We are too often inclined to value the economic things and not consider the esthetic things until we have lost them. Many of the Eastern states have lost much of their natural beauty and are now trying, at great expense, to get it back. In Colorado we have just begun to appreciate the scenic values that we have and we must begin at once to protect these values from destruction by careless lumbermen, stockmen, miners, dam builders, or others.

No one should say that we must protect beauty at any price, any more than they should say that only economic values should be considered. Each project must be carefully weighed to determine the real values present in that particular thing, and the decision to destroy one thing to create another must be carefully weighed to avoid losing things that we will be sorry for later.

The recent controversy about the access road to the proposed Echo Park dam has considered only whether Colorado or Utah would profit from the business and jobs created by this construction. There may well be

greater values that will be lost which we are not considering. This dam will be 525 feet high and back the water up the Green River 64 miles and up the Yampa 44 miles, inundating such places as Pat's Hole, Harding Hole and the canyon of the Lodore. Some of the few people who have particularly explored this country describe it as only slightly less spectacular than the Grand Canyon.

This country was considered worthy to be set aside as a National Monument a few years ago. If we allow these primitive areas to be ruined for the creation of a commercial development of questionable value, we may soon wake up to find that none of our irreplaceable national attractions are left for the enjoyment of our descendants.

We are all too inclined to turn the expenditure of this 139 million dollars over to a group of engineers who are notorious for their ability to see only the engineering angle and not consider the other values, which in many cases may be greater. This is our money that it is proposed to spend and we should KNOW what the benefits to be gained are and what the losses might be. If this area had access roads constructed to it it might well become the biggest tourist attraction in our state. We have too long ignored the fact that our state can never become a great industrial or agricultural state—that our greatest asset is as a recreational state. Let us not sleep while these attractions are destroyed.



Part of Steamboat Rock, Right. On Green River.

Fred Mallery Packard, Field Secretary of the National Parks Association, says in an article in a recent issue of the National Parks Magazine:

"The Colorado River Report of 1947 proposes two power dams to be built within the Dinosaur National Monument, which is located in Colorado and Utah. The Echo Park dam, three and a half miles downstream from the confluence of the Green and Yampa Rivers, at 5,048 feet above sea level, would create a reservoir extending sixty-four miles up the Green River and forty-four miles up the Yampa. Below Echo Park, the Split Mountain dam would back water up to the Echo Park damsite, inundating Island Park, Rainbow Park and Little Park within the monument. Among the power facilities proposed would be a three-section tunnel from the Split Mountain site eight and three-tenths miles downstream to a power plant five miles upriver from Jensen, Utah. In 1947, the estimated cost of these two projects was \$66,000,000.

The effects of these projects have been described as "a lamentable intrusion" on the monument, "totally

alien to its geography and landscape." The construction of power lines, truck roads and other inevitable structures would ruin the natural values present. Many of the outstanding geological and scenic features of the monument, including Pat's Hole, Echo Park, Castle Park, Harding's Hole and the famous Canyon of Lodore would be destroyed. The two rivers, now winding between brilliant cliffs rising thousands of feet, would become a placid lake, the whirlpools, islands and rapids completely submerged. Valuable archeological sites would be inundated, wildlife values lost and geological formations of real scientific importance removed forever from study. The plans for the pressure tunnel from Split Mountain, as well as for the dams themselves, are in process of more detailed study and revision, and there is danger that the dinosaur quarry, one of the most valuable fossil deposits in the world, might be damaged irretrievably.

Dinosaur National Monument, as the report points out, "is characterized by a notable combination of geological, scenic, biological and archeological values and by its wilderness qual-

ity. One of its exceptional attributes consists of contrasts in the geologic formations and the scenic character of the canyons of the two rivers. It possesses great importance for the part it can play as an introduction to the geology and scenery of the West for the residents of the middle and eastern states. It is of national significance for the combination of its qualities, it is distinctive of its kind, and justifies its existence as a unit of the National Park System." Located within twenty miles of transcontinental U. S. Highway 40, it should become easily accessible as soon as funds are made available.

While some of the present features would not be affected by the dams, and some recreational benefits might result, they do not compensate for these losses. "The policy of the National Park Service has been and is to make the protection of the natural

and archaeological values of the area the controlling factor in administering it. Before changes in the status of the monument are authorized in order to recognize water control as the principal consideration in administering the unit, it should have been clearly and certainly shown that it would be in the greater national interest to develop the area for such use than to retain it in its natural state for its geologic, scenic and associated values and for the enjoyment of them by the nation."

Steamboat Rock

Photos by Charles Kelly

COME

to the Evans School, 11th and Acoma, 7:45 P.M., January 13. Friday the thirteenth should be a lucky night for us.

SEE

thrilling and beautiful kodachromes of a boat trip from Green River, Wyoming, down the canyons to the Hoover Dam.

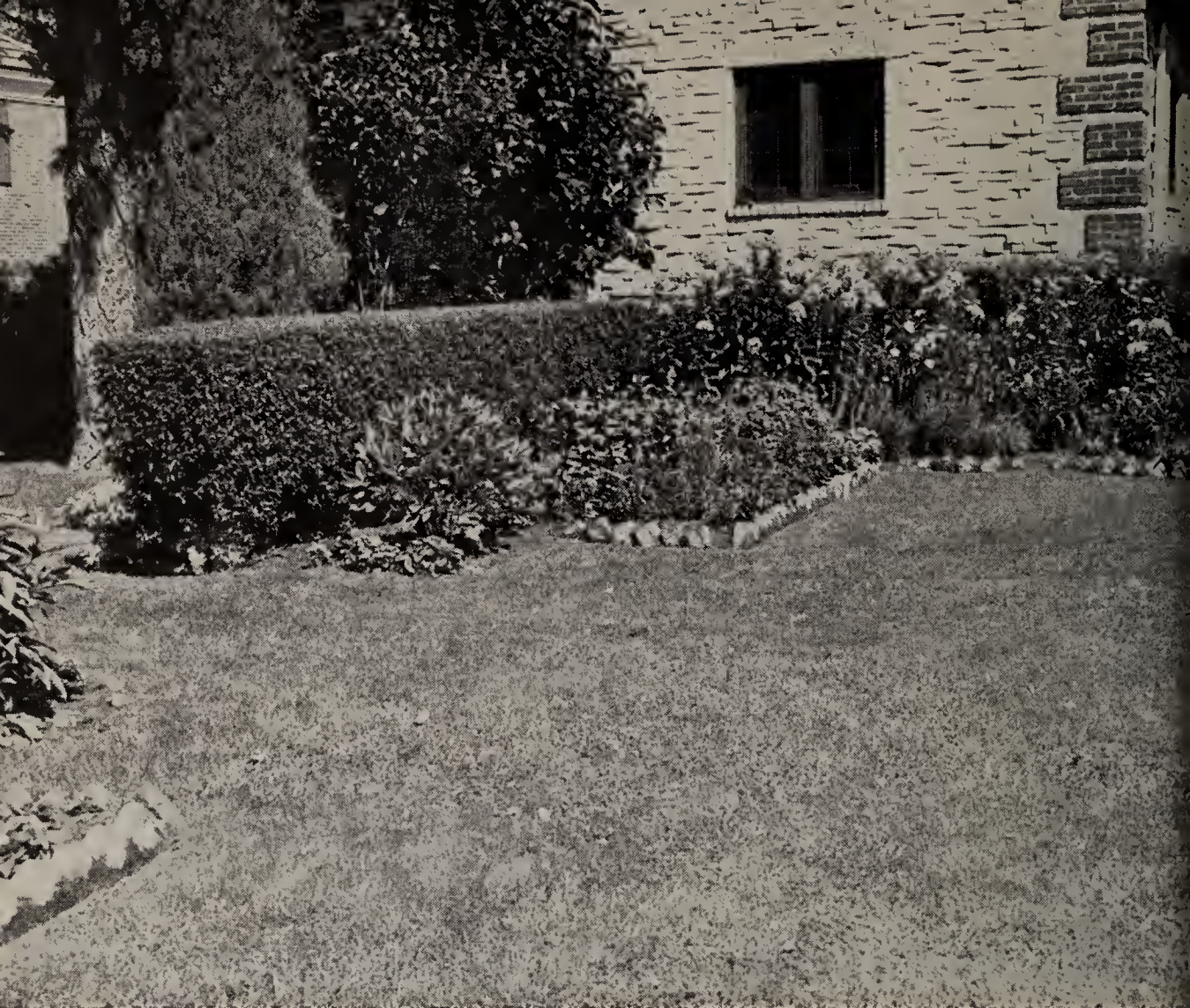
HEAR

Dick Griffith tell of this trip which has cost the lives of so many men.

LEARN

of Colorado's wild canyon country which may be flooded soon in the dam program of the reclamation service. All members and friends are invited.





A SATISFYING LITTLE GARDEN

The accompanying pictures were taken last August in the garden surrounding the home of Mr. and Mrs. Raymond E. Sargeant, Jr., at 2124 E. Fourth Avenue. They are published at this time partly to remind us that the spring planting time will soon be here and partly to show a garden which, because of good design, is effective all throughout the seasons.

The formally clipped hedge of privet serves to separate the different parts of this garden and to give it interest and character. Here, as in

most good works of art, simplicity is the greatest feature which makes for beauty. A few well chosen perennials give color throughout the summer and evergreens continue color interest all winter.

The clump of perennial phlox near the center of each picture are the same and the tall juniper near the left are the same, which will give one the relation of one picture to the other. Miss Julia Jane Silverstein was the Landscape Architect who planned this garden.

The Roadside Improvement and State Parks Committee

This important committee has been meeting for several months to formulate plans and decide policies. Carl Feiss, director of the School of Architecture and Planning of Denver University, has been its chairman since the beginning. As he has accepted an important position in Washington, Harold Lathrop has consented to take over the chairmanship. Harold Lathrop has had many years experience in state park work and is at present western field representative of the National Recreation Association.

On the occasion of the transferring of chairmanship December first, Mrs. John Evans entertained the committee at the Denver Country Club.

This committee consists of representatives of many organizations which are interested in preserving the beauty of the state and adding appropriate parks and plantings where needed. There are many things in the state which should have their immediate attention.

The membership committee plans to send out bills immediately to all those members who have not as yet paid their dues for 1950. Send yours in now and add the name of a friend who might appreciate our work.

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The contents of this wooden salad bowl were gathered from the road side on a Sunday afternoon in the dead of winter.

The tall feathery plumes are the seed stalks of the iron weed which takes on many shades of brown and

tan during the Winter. The larger forms are the seed pods of the Yucca and the common milk weed. Oregon grape leaves and a bunch of varicolored dried grass leaves gives added color to the arrangement.

By MYRTLE ROSS DAVIS

Hormones Are Interesting

Excerpts from a lecture given by Jess Fults, Professor of Botany and plant Pathology, Colorado Agricultural Experiment Station, at the Rocky Mountain Horticultural Conference, Denver, Feb. 7, 1949.

TODAY when almost everyone has heard or read about hormones, it is only natural that the question of just what a hormone is should arise. There are two general kinds—animal and plant hormones which although different chemically are similar in their action. Both kinds are alike in that they control physiological processes like growth and are effective in extremely minute concentrations. In order to distinguish plant hormones they are usually referred to as *phytohormones*.

The history of phytohormones really began with the observations of Darwin in 1880 who noticed that plants exhibit the peculiarity of bending toward the light. The cause of this was unknown until 1910 when a Danish botanist, Boysen-Jensen, found that the bending of a plant toward light is caused by the unequal distribution of a phytohormone manufactured in the growing tips of the stem. Several years later a Dutch botanist, Went, originated the plant physiologists' guinea pig, i.e., the so-called *Avena* coleoptile technique for studying the location and functions of phytohormones. In the early "thirties" a man by the name of Kogl and some co-workers succeeded in isolating the three most important natural plant hormones which are known as auxin a, auxin b, and heteroauxin or indole acetic acid. (It seems that these substances which are found in such minute quantities are given very long, often quite unpronounceable names). Since this latter was an easily synthe-

sized chemical it opened up the possibility of synthesizing and testing similar compounds for their phytohormone effects. Pioneers in this field were Zimmerman, Crocker and Hitchcock working at the Boyce-Thompson Institution. They found many chemicals with growth regulating effects similar to the natural phytohormone, indole acetic acid. These men were largely responsible for the use of synthetic phytohormones in stimulating the rooting of many hard-to-root plants. Their work called attention to the possibility of growth control in horticultural crops and stimulated tremendous scientific and popular interest.

Many scientists who have worked with hormones have discovered that the use of hormones in connection with certain plants or parts of plants has produced amazing effects. For example, one man was able to produce seedless tomatoes without pollination by spraying the flowers with synthetic phytohormone. Another man showed that potatoes could be induced to remain in a dormant condition until nearly midsummer by spraying them with minute concentrations of the mythel ester of alpha naphthalene acetic acid. This treatment also prevents sprouting in storage of such root crops as carrots, turnips and beets.

Perhaps the most dramatic use of synthetic plant hormones developed during the war when it was discovered that slightly increased concentrations of certain synthetic phytohormones would cause the death of many her-

baceous weeds. In this way the weed killing compound, 2,4-D which we buy at the seed houses as "Weedone", "Weed-B-Gone" or some other trade name was discovered. Probably no single discovery in the last 50 years has been of greater importance to people whose livelihood depends on plants.

But these are only a few things that can be done with these phytohormones. It has been found that it is possible to control the time of bloom of the pineapple in the tropics by spraying with synthetic phytohormones. It is now possible to harvest pineapples any month in the year. What a far reaching economic effect this will have in those areas where pineapples are a major crop.

The work at the Colorado Experiment Station has been concentrated on studies of the effect of certain synthetic phytohormones on potatoes and

certain potato diseases. They have found that if these materials are applied to growing plants at certain critical times during the growing season, it is possible to significantly change their skin color and improve their cooking qualities. Other experiments indicate that it may be possible to control the perennial problem of "scab" in potatoes through the application of certain chemicals, if done at the proper time and in the proper concentrations.

Though many uses are known for these synthetic phytohormones, no one has yet found a satisfactory answer as to *how* they act. It is a study which is demanding the interest and work of scores of research workers the world over. The problem is concerned with the biochemistry of both normal and abnormal cell growth which, if understood, would give us an understanding to life itself.

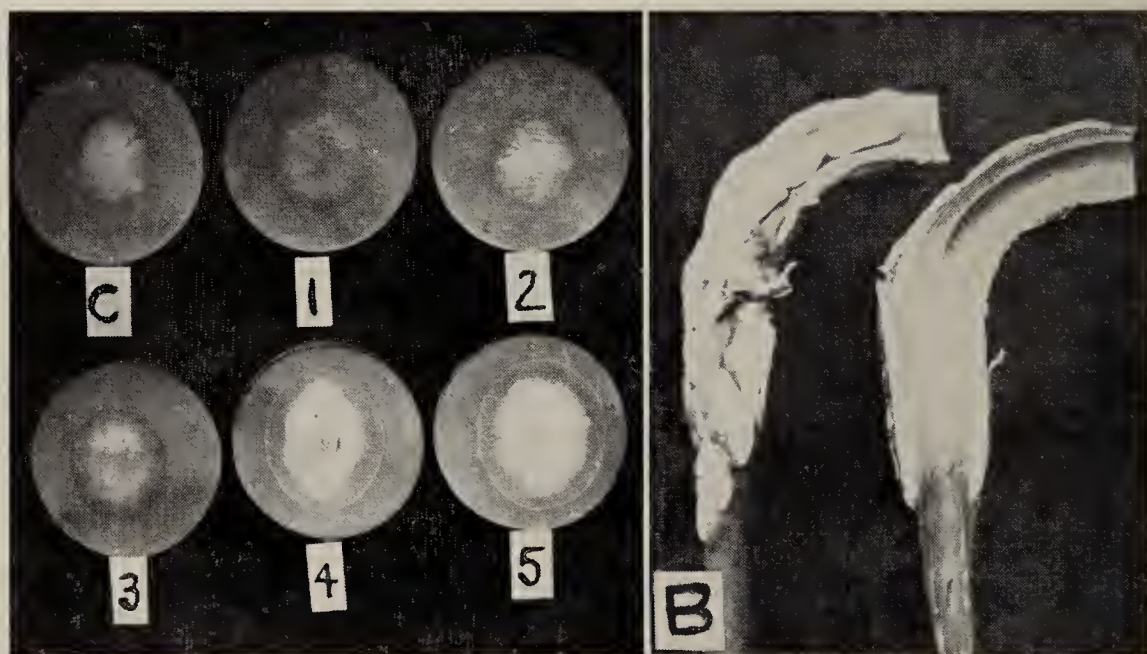


Figure A.—Scopoletin extracts from castor bean plants treated with herbicidal dosages of the ammonium salt of 2,4-D. C=control; 1, 2, 3, 4 and 5 plants treated with increasing amounts of 2,4-D. Picture taken with ultraviolet light.

Figure B.—Longitudinal sections of a stem of a castor bean plant killed with a herbicidal dosage of 2,4-D. Note the abnormal growth and the presence of the fluorescent scopoletin especially in the cortex.

THIRD ROCKY MOUNTAIN HORTICULTURAL CONFERENCE

Reserve Time for This Important Event to be Held February 6 and 7 at the Cosmopolitan Hotel, Denver, Colorado

THOSE who have attended the conferences of the past two years will not want to miss this bigger and better event. Those who have not attended before should make plans now to spend the whole two days learning of the new and better things in Horticulture for the Rocky Mountain area.

Some of the out-of-town speakers will be Thomas Martin from Provo,



Utah who has charmed audiences the past two years, W. R. Leslie, Superintendent of the Experimental grounds at Morden, Manitoba, and T. S. M. Lease of Great Falls, Montana. Others participating will include A. C. Hildreth, of Cheyenne, W. J. Henderson, Gordon Mickle, Chas. Drage, B. Wilford, and W. D. Holley from Fort Collins, Carl Herzman, Moras Shubert, S. R. DeBoer, Harold Lathrop and many other local authorities. There will be lecture sessions Monday morning and afternoon and Tuesday forenoon. The annual dinner will be

held Monday evening and Tuesday afternoon will be given over to outdoor demonstrations. All sessions will be held in the Silver Glade room of the Cosmopolitan Hotel. The rooms and balcony on the mezzanine floor will be given over to exhibits of various horticultural products. Take time to see these when you attend the Conference. Many local dealers and producers and some from greater distances are anxious to show you their best products or garden equipment. It is their support and yours that will go a long way in making the 1950 Conference a success.



John Nash Ott Coming Again

Mr. Ott's new picture, "Our Changing World," has recently been released, and we are fortunate in securing it for the first showing in this area. Save the evening of Thursday, February 23, to see this remarkable picture. It will be shown at the Phipps Auditorium. Tickets will be on sale early in February.

Mr. Ott has spent many years taking this picture and has made trips to Australia, Labrador and many other parts of the world to get the necessary shots. The picture illustrates the evolution of the earth geologically and the development of plant and animal life on the earth. Using the "time-lapse" system which he perfected this picture will show in a few minutes processes which actually took years or centuries to happen. No one who saw his picture last year, "Plants in Action," will want to miss this picture. Mark the date now.

CONSERVATION EDUCATION

R. H. ECKELBERRY

Editor and Professor, Bureau of Educational Research
Ohio State University, Columbus, Ohio

*Extract from talk given at Inter-American Conference on Renewable
Natural Resources, in Denver September 7-20, 1948*

THE success of any program of conservation depends upon the education of the lay citizen.

A program of conservation education should include within its scope adults as well as children and youth. The need for conservation is so urgent that we dare not wait for a new generation to be brought up before we start a conservation program. If we do, in many parts of the Americas there will be but little left to conserve. If we are not to face disaster, the present generation of adults must come to understand and apply conservation principles. We need, in every community, a conservation-education program for persons of all ages, and with its different phases in the closest possible relation to each other.

The people of the world in general, and of the Americas in particular, face just two problems of the first importance: (1) the development and maintenance of just and peaceful relations among nations, and (2) the wise use of natural resources. The organizations must realize that if we do not solve these problems, it will matter very little what we do about most of the other problems that we face.

If conservation education is to be most effective for either young people or adults, conservation must be treated primarily, not as a subject to be taught at certain times, but as a way of looking at things which affects, and is affected by, practically all human activities and all subjects of study.

Conservation ideas and principles

must permeate all our educational efforts. In the school, the teacher of history, mathematics, biology, literature, or any other subject must be also a teacher of conservation. The clergyman in both his preaching and his pastoral work must continuously help his people understand the need for conservation and their duty to maintain and improve the God-given resources which have been so grievously damaged by man's ignorance and selfishness. The youth organization and the civic association must plan their entire programs so as to make conservation a matter of major emphasis.

The economic welfare, not only of future generations, but of the present generation, now and in the immediate future, requires better methods of resource use. If this generation is to maintain its standards of living, to say nothing of improving it, it must practice conservation.

Are You Phytophilous?

By M. WALTER PESMAN

Don't worry if you are phytophilous, practically every reader of the GREEN THUMB is, — or will be. "Phyto" means plant, and "philous" has to do with loving; plant-loving is not too fatal a disease, even though many people carry it with them all through life. Most of them die with it.

Dr. Franz Verdoorn used the term in his address on the site of the projected Los Angeles County Arbore-

tum. That site is at the Rancho Santa Anita at Arcadia. It is one of the forty arboretums established in 1948 in North America. Evidently the time is ripe for arboretums and botanical gardens.

You can have a pamphlet on "The Modern Arboretum", by Franz Verdoorn, by writing to the Los Angeles County Arboretums in Arcadia, Cal., and enclosing twenty-five cents.

Should you have an overdose of Phytophily, look at the large pamphlet at Horticulture House, called "The Arboretums and Botanical Gardens of North America", by Donald Wyman. It contains a complete list, and a list of books on the subject.

But it does not mention a Rocky Mountain Botanical Garden for Denver. Not yet.

American Horticultural Council Reorganizes

ON October 30, 31 and November 1, I attended the fourth yearly session of the American Horticultural Council held at the Essex House in New York City. Prominent horticulturists from all over the United States attended. This idea for United Horticulture has been the objective of several well-known horticulturists for many years and at this meeting plans were formulated to start a definite action program. Robert Pyle has been president from the beginning and chief exponent of the value to America of a United Horticulture.

Active committees were set in action at this time to develop cooperation among various groups of horticultural people for the advancement of their special interest in gardening. The Garden Writers started a very effective organization to promote more and better horticultural writing, the specialized plant societies agreed to cooperate in many such things as no-



menclature and color descriptions and the directors of garden centers mutually discussed their problems of Finance, Personnel and Programs. Other committees reporting were on Horticultural Education, Research, Awards, Testing, Nomenclature and Horticulture in Industry.

Dr. Wendell H. Camp of the New York Botanical Garden was elected the new president to succeed Robert Pyle. A new basic plan for memberships is being worked out which will permit a large popular membership at \$5.00 who will receive regular bulletins of the latest things in horticulture. There were also plans made to ask representatives from all existing horticultural organizations to send representatives to an advisory council planned to coordinate all their activities for the advancement of Horticulture in the United States.

This new organization should help to make a more beautiful America.

THE DETRIMENTAL STUB

A DEAD or diseased branch is sawed from a tree. If the job is done properly, the wound heals quickly and both the health and appearance of the tree are improved. If a projecting stub is left, it is questionable whether or not there is any improvement in appearance, and the health of the tree actually may decline as a result of the pruning. When a pruning job is finished, the absence of stubs is the hallmark of the skilled arborist; stubs, "on which you can hang your hat," bespeak ignorance of the nature of tree growth, or carelessness, and typify the work performed by untrained operators.

The manner in which trees grow makes it almost impossible for stubs to be anything less than detrimental to the health of the tree. From the cambium, a layer of cells just beneath the bark of all twigs, branches and the trunk, comes all new wood growth. Twigs and branches increase in length through the addition of new wood cells at the tip; they, and the trunk, increase in diameter through the development of new wood tissue just below the cambium layer. The inner portions of the stem, the sapwood and the heartwood, lack the ability to produce new growth. Moreover, the heartwood is susceptible to attack by wood destroying fungi. Consequently, if the sapwood and the heartwood are exposed and remain without protection, decay and eventual death occur. When a branch is stubbed-off, the cambium of the stub, deprived of its food-producing leaves, dies back to the main stem. The exposed surface of the stub cracks and checks, water pockets develop, and favorable conditions for the growth of wood-rotting fungi are provided. Once established,

these fungi work downward through the stub and into the heartwood of the main stem. Cavities develop that often extend the full length of the trunk.

At the base of a stub that has died several years previously may be found a ring of rough, callus-like growth. This wood tissue is produced by the cambium of the main stem, and is piled up year by year around the stub. If the stub is short, eventually it will be entirely enclosed and hermetically sealed in by this callus growth, which will afford the same protection against disease as does the bark. Before growth closes, however, the tree usually has been invaded by fungi that gained entrance through the stub.

In all pruning operations, to lessen the possibility of decay, it is desirable that the wounds caused thereby become covered by callus growth, healed in other words, as quickly as possible. This healing process is facilitated by cutting the branch flush with, and parallel to, the stem from which it grew. Generally, this results in an oval-shaped wound with the longer axis parallel to the stem. Depending upon the size and shape of the cut, the species of tree and other conditions, the bark may be chiseled to a point both above and below the wound. This eliminates decay-promoting water pockets. Moreover, since the sap movement is parallel to the length of the stem, wounds that are pointed at both the top and bottom heal rapidly and without further die-back of the bark. As the final step in pruning, all wounds should be painted with an antiseptic dressing.

As presented in "*The Shade Tree Digest*" by Swingle Tree Surgery Co.

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JANUARY GARDENING

What gardening chores could there be in January, you ask. Of course, the ground is frozen up and the plants are dormant. January should be the big planning month—the time when we surround ourselves with seed catalogs, gardening magazines and horticultural books and let our minds wander to the big things that we will do in gardening this fresh new year. Probably the greatest good comes from our gardening efforts because we are annually having our faith renewed in the rightness of everything as we see the seeds and twigs break forth in new leaves.

When the warm days do come and the ground can be worked there is little time to plan, so now we should make our plans definite enough so that we can concentrate on carrying them out later with the minimum of wasted time.

We have often wished as we plant the seed or pick the fruit, that we knew more about these plants—where they came from, how they grew, what relation they bore to other plants, how many kinds were included in one family or what their cultural preferences were. Now is the time to study these things. If you do not have the necessary books, all members may borrow books on all horticultural subjects from the library at Horticulture House. Series of classes may be arranged on any allied subject at Horticulture House or in connection with your own local organization.

Take notes as you study. Even though you never refer to these notes, you will find that it helps to remember desirable facts. When you have decided on some addition or change in your garden, work it out in detail on paper so that you will not forget.

In Colorado we usually have our coldest weather in January, so our chief outside chores may be to prevent snow damage. Bracing trees or tying up shrubs and low evergreens may prevent some snow damage. There may be several days when the sun will be very warm and the air dry, that plants will need water.

Picture on back cover of a section of naturally landscaped road along the Poudre River in the Roosevelt National Forest. Photo by U. S. Forest Service



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COLORADO'S GARDEN MAGAZINE



ROCKY MOUNTAIN HORTICULTURAL CONFERENCE
SEASONS OF PLANT COLOR IN DENVER
SHRUBS AND VINES FOR COLORADO
FINDING SPRING

THE 1950 PLANTING SEASON

will soon be here. Your Colorado nurserymen wish to serve you in the best way possible. Most plants may safely be moved any time after the frost is out of the ground up until they start out in leaf. It will be to the advantage of each of us if you will make definite plans now for the plants that you will need and work that should be done. During the short planting season we must work to the best advantage to get everything done.

Call on the experience of the firms listed below to help in the selection of plants which will give best results in Colorado's difficult climate. Do not overlook the value of thorough preparation of the soil in which you will plant your trees, flowers or lawn. The best of plants can not give good results when planted in poor soil.

BELOW IS A LISTING OF THE MEMBERS OF THE COLORADO NURSERYMEN'S ASSOCIATION

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Colorado Forestry and Horticulture Association

Organized in 1884

"To preserve the natural beauty of Colorado; to protect the forests; to encourage proper maintenance and additional planting of trees, shrubs and gardens; to make available correct information regarding forestry, horticultural practices and plants best suited to the climate; and to coordinate the knowledge and experience of foresters, horticulturists and gardeners for their mutual benefit."

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 Secretary.....Mrs. A. L. Barbour

February 1950 Schedule

- Feb. 1—Wed., 2 p.m. Horticulture House. Third in series for home owners, "Preparing the Soil and Planting." A discussion of soils, fertilizers and planting methods.
- Feb. 1—Wed. 7:45 p.m. Horticulture House. Commercial class, "Plant Growth—leaves, roots, flowers." By Moras Shubert, illustrated with colored movies.
- Feb. 6-7—Mon. & Tues., Cosmopolitan Hotel. 9:30 a.m. to 10 p.m. Third annual Rocky Mountain Horticultural Conference. See further announcements.
- Feb. 8—Wed., Horticulture House. Commercial men. "Propagation," by George Kroh and others. Kodachromes of ornamental trees and shrubs, by Wm. Lucking.
- Feb. 9—Thurs., 8 p.m., Horticulture House, Rose Society. Colored movies; "How to Grow Beautiful Roses," by John Paul Edwards. Shown by Mr. R. V. Seaman.
- Feb. 12—Sun. Meet Horticulture House 9 a. m. for start of snowshoe hike into the wild country west of Denver. Call for particulars of destination and equipment necessary. Registrations must be in by Friday evening.
- Feb. 15—Wed., 7:45 p.m. Horticulture House. Commercial men. "Planting, Soil Preparation, Cutting Back, Putting the Plan on the Ground". A timely discussion of these important subjects. By Henry Gestefeld.
- Feb. 16—Thurs., 8 p.m., Horticulture House, Iris Society.
- Feb. 22—Wed., 3 p.m. Horticulture House. Final session of home owners classes, "Planting Lawns and Vegetables."
- Feb. 22—Wed., 7:45 p.m. Horticulture House. Final session of the series for Commercial men. "Construction — Flagstone, Rockeries, Walks, Drives, Sprinkling Systems," by Andrew Larson and Roy Woodman.
- Feb. 23—Thurs., 8 p.m. Phipps Auditorium. Remarkable pictures, "Our Changing World," by John Nash Ott. Tickets on sale at Horticulture House. See further announcement.
- Feb. 26—Sun. Meet at Horticulture House 9 a.m. for start of snowshoe trip in the vicinity of the Silver Cedar Botanical Reserve.
- Mar. 3—Fri., 7:45 p.m. Horticulture House. A selection of outstanding kodachromes of mountains and the plants growing in them will be shown by Wm. Lucking. Everyone invited. Announcement of 1950 outdoor schedule.



FINDING SPRING

By MINNA F. DICKINSON

FINDING spring is a fascinating game that anybody can play—this matching of wits with nature. So why let it dance and dance before we sleepy-eyed mortals of winter begin to take notice?

Spring is for everybody, no matter who you are or where. Let's catch it in its very first glow. How wonderful—that deep assurance of age-old order lifted into a sensing of new beginnings, a looking ahead.

"Mom, come see my pretty sky," shouts a three-year old running in from play, his world a world of rainbow tints, piled high on high. It's spring. He knows more than he sees, and he has more than he knows. Something that we're impelled to find anew. Else, why is spring?

Do you live in the land of the trailing arbutus? Or where the first-of-all robin gets a write-up in the papers? Perhaps you've seen a farmer's wife bring into the house an apronful of fluffy yellow chicks. You instinctively hold them close to your cheek as they peep, peep, peep.

Here in the Rocky Mountain West, it's February. Mountain peaks flash signals of winter from frozen fields of ice and snow. Longs, Pikes and Evans speed the message. Graciers may still be forming up in the high country, but canyons come down to tell a different story. February is a month of many tricks, but that is where the fun comes in.

We, who pride ourselves on being mountain-wise know that arctic winds may be sweeping down a certain slope while a kindly sun takes over just across the way. Cars are passing by, loaded with skiers bound for Aspen, but straight ahead, even beautiful Berthoud Pass looking into distance after distance can't tempt us today, because we're acquainted with a certain little stream up Deer Creek Canyon.

Sure enough, there is its valley—coaxing us with warmth. Down we swoop on a flowing bank of green, and spring blows sweet and clean across our faces. We taste the freshness. Our little thing of a river is running away as fast as it can, tumb-

ling over itself to get away from ice and snow, but delightfully impudent as always with its teasing "Catch me if you can."

"Wait a minute. Please".

Our Colorado dogwood has decided on a redder hue, and "pussies" in the willows are rubbing their eyes, we know. Blue spruce are standing by, murmuring their friendly approval.

"Here, you sassy imp! Have a bite". What a noisy bird, this camp robber jay, with feathers that try to match the sky. He acts as if he owned the whole domain. He does have a high priority.

Why that crazy bee! What does he think that he can do for a living so early in the year? We hope that that pile of red rock mountain hasn't turned his head with all that sunshine bouncing off. He may be wiser than we.

The blue smoke of our campfire begs us to look high, yet higher. Was ever the sky so blue a blue? Let's climb. Who will be the one to find that first spring flower? It's mighty close to St. Valentine's Day. We slow our steps and look ever so closely—our tiny Spring Beauties are shy. But what a thrill it will be to find them, chasing each other from under the melting snows to peek at us in pink and white.

Oh! They were expecting us. What a pity if we had not come.

A February day is short—shorter in the Rockies. Pines marching high on the crest of the opposite slope are slanting long blue shadows over the snow. Pointing our way with a tinge of purple! We must hurry if we are going to take you that first spring bouquet.

Here is a fistful of rich black dirt. How well it fits the hand so warm and moist. It sparkles with bits of silvery mica. Soil that has been mellowed by a million springs.

Now for a pebble or two covered with a fairyland forest of moss. Perhaps the yellow willow will part with the tip of a twig. It will sprout roots, you know. Here is some kinnikinnick of Indian days faithfully trailing along, its green never failing. See how the Oregon grape hurries to loosen its tight little knots of gold without even bothering to renew last year's foliage. What is this, weaving a lacy design with touches of lavender? Let's leave it. And the yellow violet, too. How about a sprig of feathery sage, so soft, and delicately gray? It's fragrance belongs to the west, and is lasting. Let's poke in some seeds. Wild oats for greenery, and timothy for accent. Oh look, a rosette of mullein with leaves of frost-dewed velvet. You'll love it.

Our car joins a circling of lights slowly going home down the mountain side. Can this be the same day that it was this morning? Ahead of us, the neon lights of city streets look pretty against the sky. But are we leaving spring behind? Well, perhaps. But we're taking it with us too.

Once ours, it still belongs. What is a moment anyway? Does God count time or measure distance? Spring may always be wherever one can find it.



Woody Ornamental Plants for Landscape Use in Colorado

IN the following pages we are listing trees, shrubs, vines and evergreens which are adapted to use in Colorado or the Rocky Mountain area. These lists have been compiled by the editor but have been checked with many local authorities and represent the result of many years experience. These helps should prove valuable in selecting the proper plant for each particular landscape situation. Existing publications have only considered

other parts of the United States where conditions are very different and many of these books have been more confusing than helpful. No such list as this can be made to be correct for an indefinite time, as new plants will be introduced and pests may eliminate others. As omissions or corrections are noticed we would appreciate having our attention called to them, so that future revisions may be corrected.

SHRUBS FOR COLORADO

THE following lists of shrubs are arranged to help all gardeners select the right kind for each requirement. Select them for size, season of blooming, type of soil or location. These have all been tried in Colorado and are here rated for their good and bad qualities.

T—indicates tall, over 6 feet; M—indicates medium, 3-6 feet; L—indicates low, under 3 feet.

Acanthopanax spinosus, FIVELEAF ARALIA—M

Erect spiny shrubs. Usually hardy.

Acer ginnala, AMUR or GINNALA MAPLE—T

The leaves are very attractive and in the fall turn to a brilliant red.

Acer glabrum, ROCKY MOUNTAIN MAPLE—T

More dense and bushy than the Ginnala Maple. Leaf-stems and winter buds are bright red. A good native shrub.

Acer tataricum, TATARIAN MAPLE—T

A large shrub similar to Ginnala Maple. Leaves not deeply lobed.

Alnus tenuifolia, THINLEAF or MOUNTAIN ALDER—T

Native tree-like shrub, useful for tall backgrounds. Smooth grey bark, beautiful early spring catkins and interesting seed cones.

Amelanchier sp., SERVICEBERRY—T

There are several native species adapted for cultivation here. Slow growing. White flowers and edible fruit.

Amorpha canescens, LEADPLANT AMORPHA—L

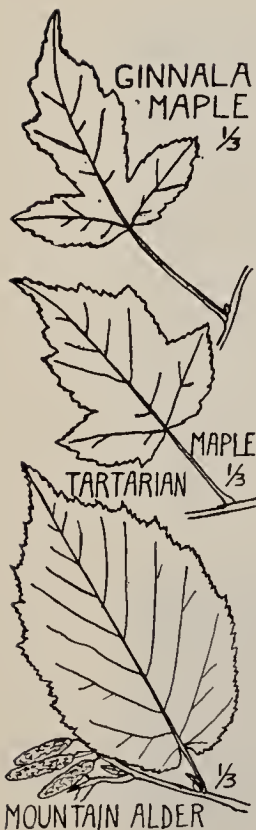
A low shrub with silvery-white foliage and heads of violet blue flowers throughout late summer. Very hardy and drought resistant.

Amorpha fruticosa, INDIGOBUSH AMORPHA—M

A native shrub of loose growth. Purple flowers in June. Good for dry places.

Amorpha nana, DWARFINDIGO AMORPHA—L

Hardy and drought resistant. Fern-like leaves and spikes of purple flowers in summer.



Aralia spinosa, DEVILS-WALKING STICK—T

Also called ANGELICA TREE and HERCULES CLUB. Large prickly stems, and very large, compound tropical-looking leaves. Unusual, half hardy shrub.

Arctostaphylos uva-ursi, BEARBERRY KINNIKINNICK—L

Evergreen, trailing native. Useful for ground cover on very well-drained slopes. Difficult to transplant.

Berberis koreana, KOREAN BARBERRY—M

A barberry with large, leathery leaves and long clusters of small yellow flowers in spring followed by bright red berries and brilliant red leaves in fall. Resistant to wheat rust.

Berberis thunbergi, JAPANESE BARBERRY—L

A good dwarf shrub for low informal hedges or specimens. Thorny stems and attractive red berries in fall and winter. Prefers a rich clay soil.

Berberis thunbergi atropurpurea, REDLEAF JAPANESE BARBERRY—L

Leaves remain red all summer. Very attractive, but not as hardy or vigorous as greenleaf variety.

Berberis thunbergi, Cl., TRUEHEDGE COLUMNBERRY—L

The new dense, upright form of Japanese Barberry. Makes good hedges with very little trimming. Hardy and reliable here.

Betula fontinalis, WATER or ROCKY MOUNTAIN BIRCH—T

A native, tree-like shrub found growing in moist places in company with Mountain Alder. Branchlets slender and graceful and the bark a beautiful cherry-brown.

Buddleia sp., BUTTERFLYBUSH—M

Large purple, blue, red or white spike-like flowers in summer. They are very fragrant and attract butterflies. Should be treated as a perennial and it dies to the ground each winter.

Caragana arborescens, SIBERIAN PEASHRUB—T

Of narrow upright growth, useful for tall hedges or specimens. Neat foliage and small yellow flowers in spring. Very hardy and drought resistant.

Caragana aurantiaca, DWARF PEASHRUB—L*Caragana pygmaea*, PYGMY PEASHRUB—L

These very dwarf shrubs have small green leaves and small orange flowers. Drought resistant.

Ceanothus velutinus, SNOWBRUSH CEANOTHUS or MOUNTAIN BALM—L

A native, broadleaved evergreen, most common on the Western Slope. Very difficult to transplant.

Cercis canadensis, EASTERN REDBUD—T

Sometimes hardy here in protected places. Distinctive reddish-purple flowers in very early spring.

Cercocarpus montanus, TRUE MOUNTAINMAHOGANY—M

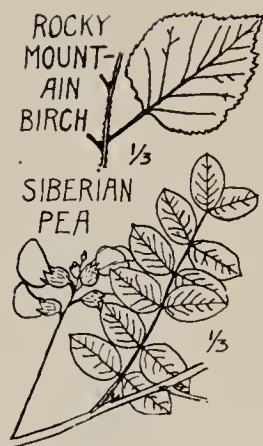
An interesting native shrub of dry hillsides. Covered in fall with peculiar, twisted, fuzzy-tailed seeds.

Chaenomeles japonica, JAPANESE FLOWERING-QUINCE—M

The common form has brilliant red flowers in spring. Other varieties in shades of pink and white. Slow growing.

Colutea arborescens, COMMON BLADDERSENNA—M

Foliage and flowers similar to Siberian Peashrub, but of more spreading habit and not as hardy. The silvery inflated seed pods hang on throughout winter.





THICKET HAWTHORN



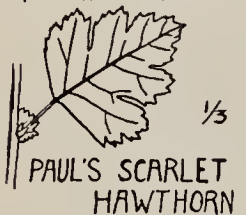
COCKSPUR THORN



DOWNY HAWTHORN



ENGLISH HAWTHORN



PAUL'S SCARLET
HAWTHORN



RUSSIAN OLIVE

Cornus racemosa, GRAY DOGWOOD—T

Of very neat upright habit similar to Nannyberry. Flowers and fruit small.

Cornus stolonifera coloradensis, COLORADO REDOSIER DOGWOOD—M

One of the most useful native shrubs. Graceful and symmetrical habit of growth. Stems are bright red all winter, making an interesting spot of color especially good in association with evergreens.

Cornus stolonifera flaviramea, YELLOWTWIG REDOSIER DOGWOOD—M

Similar in habit to the Red Dogwood, but stems are golden yellow and it is not as hardy.

Corylus cornuta, BEAKED FILBERT or HAZELNUT—T

Very slow growing native. Likes a moist north slope.

Cotinus coggygria, COMMON SMOKETREE or PURPLE FRINGE—T

An interesting, half hardy shrub covered with clouds of feathery bloom in fall.

Cotoneaster acutifolia, PEKING COTONEASTER—M

A clean, nicely shaped shrub, with slender spreading branches, bearing small glossy, dark green leaves. Small bloom, but the attractive black berries hang on all winter.

Cotoneaster integerrima, EUROPEAN COTONEASTER—M

Slender, spreading and arching branches. Persistent red fruit. Tolerates alkaline soil.

Crataegus coloradensis, COLORADO HAWTHORN—T

A large informal native shrub or small tree, having masses of white flowers in spring and persistent red fruit in fall. Attractive "varnished" brown bark. Slow growing.

Crataegus crusgalli, COCKSPUR HAWTHORN—T

Low, round-headed shrub or tree. Very long thorns and dark red fruits persisting all winter.

Crataegus intricata, THICKET HAWTHORN—T

Large leaves which are brilliantly colored in fall. White flowers in spring and red fruits in fall.

Crataegus mollis, DOWNY HAWTHORN—T

Usually grown in the form of a small symmetrical tree. White flowers in spring and large, red, edible fruit in fall.

Crataegus oxyacantha, ENGLISH HAWTHORN—T

The most delicate, fine-textured and slow-growing of the hawthorns. Subject to fire-blight.

Crataegus oxyacantha, Cl. PAUL'S SCARLET THORN—T

Has clusters of beautiful, double, red flowers in favorable years. Similar to the English but not as hardy.

Crataegus phaenopyrum, WASHINGTON HAWTHORN—T

White flowers and the brightest red persistent fruits. One of the best.

Crataegus saligna, WILLOW HAWTHORN—T

Native shrub of irregular habit. Willow-like leaves and small black fruits.

Elaeagnus angustifolia, RUSSIANOLIVE—T

Very hardy and drought resistant shrub with silvery-gray leaves. May be grown as a large shrub, small tree or trimmed as a hedge.

Euonymus alatus, WINGED EUONYMUS—M

Rose-red and green corky bark. Red-orange and rose-red leaves in fall. One of the best.

Euonymus atropurpureus, EASTERN WAHOO—T

Somewhat similar to the European Burningbush, but of slower growth, larger leaves and much richer fall color. Attractive red and orange fruit hanging on till late.

Euonymus europeaus, EUROPEAN EUONYMUS—T

Also called Burningbush or Spindle Tree. A large shrub with dark green leaves and stems, and upright habit of growth. Rose-red fall leaves and red-orange fruit in fall and winter.

Exochorda racemosa, COMMON PEARLBUSH—M

A nice-half-hardy shrub. Small white flowers which resemble a string of pearls when in bud.

Fallugia paradoxa, APACHEPLUME—M

A native shrub of dry alkaline places. Bears small, white, rose-like flowers followed by fuzzy, clematis-like seed heads.

Forestiera neomexicana, NEW MEXICAN FORESTIERA or MOUNTAIN PRIVET—T

A native shrub similar to privet. Hardy and useful for specimens or hedge.

Forsythia intermedia spectabilis, Cl. SHOWY FORSYTHIA—T

The familiar early-blooming Goldenbells. Flowers large and profuse (when not killed by a late frost). Quick growing and of upright habit.

Forsythia suspensa, WEEPING FORSYTHIA or GOLDENBELLS—M

Covers with golden bells in very early spring before the leaves appear. Drooping habit useful above walls or on banks. Stands partial shade. Variety Fortunei is more erect in habit of growth.

Hibiscus palustris, COMMON ROSEMALLOW—L

Kills back each fall like a perennial, otherwise considered as a shrub. Beautiful large hollyhock-like flowers in colors from white to red.

Hibiscus syriacus, SHRUBALTHEA—T

Large hollyhock-like flowers on a tall slim shrub. Only hardy here in a protected place.

Hippophae rhamnoides, COMMON SEABUCKTHORN—T

A small tree or large shrub with silvery leaves similar to the Russianolive. Orange berries in fall.

Holodiscus dumosus, BUSH ROCKSPIREA—M

A valuable slow-growing native shrub, closely related to the familiar spireas. Its dense regular growth and its ability to withstand drouth make it very useful. Covered in summer with large heads of white flowers.

Hydrangea paniculata, Cl. PEEGEE HYDRANGEA—M

large panicles of flowers in summer. Usually kills to ground each winter, but, in protected place, will bloom each year.

Jamesia americana, CLIFF JAMESIA—M

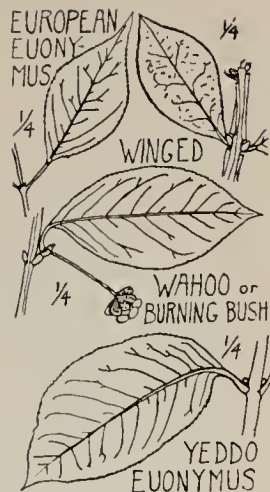
Sometimes called Wax Flower or Wild Hydrangea. Delicate waxy-white flowers. One of our nicest natives, but requires a very well-drained location and prefers partial shade.

Kolkwitzia amabilis, BEAUTYBUSH—T

Nice arching habit of growth and neat leaves. Covered in spring with pink bell-shaped flowers.

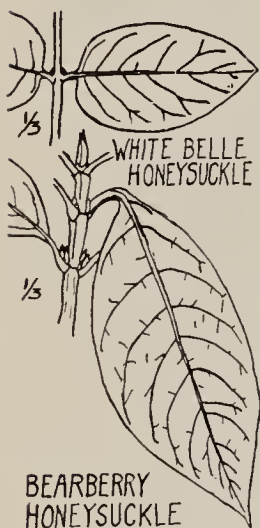
Lespedeza thunbergi, THUNBERG LESPEDEZA—M

Also called Desmodium or Purple Bush Clover. Drooping stems loaded with rose-purple pea-like flowers in fall. Dies to the ground each winter.





REGEL PRIVET



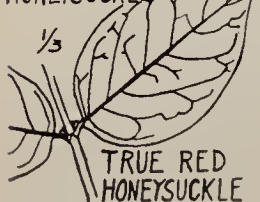
BEARBERRY HONEYSUCKLE



SAKHALIN HONEYSUCKLE



RED BUSH HONEYSUCKLE



TRUE RED HONEYSUCKLE

Ligustrum obtusifolium regelianum, REGELS BORDER PRIVET—T

Loosely arranged horizontal branches. More valuable as a specimen shrub than for hedges. Heads of fragrant white flowers and jet black berries.

Ligustrum vulgare, EUROPEAN PRIVET—T

The best privet in our climate. Makes a dense hedge when properly trimmed. Foliage a dark glossy green and retained well into the winter. Attractive flowers and fruit when not trimmed. Varieties called Thompsons, Swedish and Polish are improvements of this type.

Ligustrum vulgare, Cl. LODENSE PRIVET—L

A dwarf type suitable for making a low hedge as a substitute for boxwood. Holds its dark-green leaves until Christmas.

Lonicera involucrata, BEARBERRY HONEYSUCKLE—M

A native shrub found in moist places. Conspicuous red involucres enclosing two black berries.

Lonicera korolkowi, BLUELEAF HONEYSUCKLE—T

Of spreading informal habit with blue-gray foliage covered in spring with clouds of apple-blossom-pink flowers.

Lonicera maackii, Cl. AMUR or LATE HONEYSUCKLE—T

Large dark green leaves and attractive fragrant, white flowers followed by persistent red fruit. The most rapid growing and the latest flowering of the bush honeysuckles.

Lonicera maximowiczii, *sachalinensis*, SAKHALIN HONEYSUCKLE—M

A new species of bush honeysuckle of much promise. Of dwarf habit and dense growth. Numerous small rose-red flowers and crinkly green leaves.

Lonicera morrowi, MORROW HONEYSUCKLE—T

Wide spreading branches with leaves dark green above and grayish beneath. Creamy-white flowers in May and yellow or red fruits from August to late fall.

Lonicera spinosa alberti, THORN HONEYSUCKLE—L

Dense, spreading shrub with fragrant lilac flowers in spring.

Lonicera syringantha, LILAC HONEYSUCKLE—M

Fragrant lilac flowers in May. A spreading, slender branched shrub with many small gray-green leaves.

Lonicera tatarica, TATARIAN HONEYSUCKLE—T

Upright branches with deep pink flowers in May and June and attractive red berries in fall. Has been our most popular large shrub.

Lonicera zabeli, TRUE RED HONEYSUCKLE—T

Flowers small but numerous and of a darker red than other honeysuckles. Very attractive.

Lycium halimifolium, MATRIMONY VINE—M

Very hardy and drought resistant. Becomes unkempt when neglected but may be trained in many interesting ways as a vine or shrub. Good for covering dry banks.

Mahonia repens, CREEPING MAHONIA or OREGON-GRAPE—L

A very attractive, native ground cover, lower than the Eastern species. Suckers freely from the roots. Requires a very well-drained location.

Philadelphus coronarius, BIG SWEET MOCKORANGE—T

Hardy, fast growing, erect shrub that will stand some shade. Large white fragrant blossoms in June.

Philadelphus lemoinei, Lemoine MOCKORANGE—M

A neat dense, symmetrical shrub covered with small white flowers in spring. Several hybrids such as Avalanche and Mont Blanc have been used where well protected.

Philadelphus virginalis, VIRGINALIS MOCKORANGE—T
Semi-double, fragrant, white flowers in June and throughout summer. Slow growing and rather tender but worthwhile in a partly protected location.

Physocarpus monogynus, MOUNTAIN NINEBARK—L
A native low spreading shrub of the north slopes. Covered in spring with masses of white flowers.

Physocarpus opulifolius, COMMON NINEBARK—T
Large spreading shrub, having clusters of creamy-white flowers, followed by interesting brownish seed pods.

Physocarpus opulifolius, Cl. DWARF NINEBARK—M
Similar to bridalwreath spiraea, but lower and less spreading. Covered with white flowers in spring and attractive red-brown seed pods in summer. Good fall color.

Potentilla fruticosa, BUSH CINQUEFOIL—L
A native dwarf shrub with spreading stems. Loose clusters of small, rose-like yellow flowers throughout the summer. It will grow in dry or wet, shady or sunny locations. The variety Gold Drop is much denser floriferous and vigorous.

Potentilla fruticosa veitchi, VEITCH BUSH CINQUEFOIL—L
Similar to above but has white flowers and is less damaged by spider mites.

Prunus americana, AMERICAN WILD PLUM—T
Our native wild plum useful for a tall, hardy background. Beautiful when in bloom and frequently produces good plums.

Prunus americana, Cl. Newport PURPLELEAF PLUM—T
Similar to *Prunus cistena* in color but more upright in habit of growth.

Prunus besseyi, BESSEY CHERRY or WESTERN SAND-CHERRY—M
White flowers in spring and small black edible plums in fall. A native of spreading habit, useful for covering banks. The variety called Hanson Bushcherry has better quality fruit and better habit of growth.

Prunus cistena, HANSON PURPLE PLUM—M
Leaves remain purple-red all summer. Useful for an accent point among green foliage. Flower and fruit unimportant.

Prunus glandulosa, Cl. DOUBLEWHITE FLOWERING ALMOND—M
An attractive shrub of early spring. Should be used more.

Prunus glandulosa, Cl. DOUBLEPINK FLOWERING ALMOND—M
One of the most popular shrubs of early spring because of its masses of beautiful pink flowers.

Prunus padus, EUROPEAN BIRDCERRY or MAYDAY-TREE—T
Bloom and fruit to our native Chokecherry but this plant does not sucker from the roots and so is more useful. Not as hardy as our native Chokecherry.

Prunus pennsylvanica, PIN or BIRD CHERRY—T
A neat and attractive native shrub which is adaptable for planting in groups or in tall backgrounds. It has a profusion of white blossoms in spring and tiny bright red berries in summer.

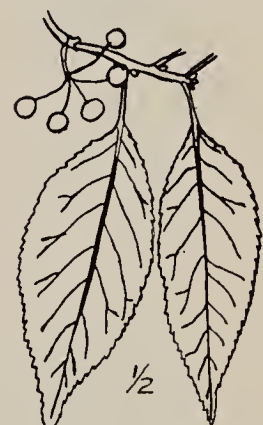
Prunus tenella, (nana) RUSSIAN ALMOND—L
Beautiful red buds and pink flowers in early spring. Very slow growing.



DWARF
NINEBARK



PURPLE LEAF PLUM



BIRD CHERRY



NANKING CHERRY



DOUBLE-
FLOWERING PLUM

Prunus tomentosa, MANCHU or NANKING CHERRY—M
Large attractive shrub having beautiful pink blossoms and red edible fruit, will be more commonly planted when it is better known.

Prunus triloba, multiplex, DOUBLE-FLOWERING PLUM—M

Covered with beautiful double pink flowers in early spring, often mistaken for a large flowering almond.

Prunus virginiana demissa, WESTERN CHOKECHERRY—T
The familiar native shrub with clusters of white flowers and black edible fruit. Useful for tall thickets. Hardy and slow-growing.

Ptelea trifoliata, COMMON HOPTREE or WAFER ASH—T
A partly hardy shrub with inconspicuous flowers but large showy clusters of silvery, hop-like fruit which remain attractive throughout winter.

Purshia tridentata, ANTELOPE BITTERBRUSH—M

Low native shrub on dry hillsides. Very fragrant yellow flowers each spring, difficult to transplant.

Rhamnus cathartica, COMMON BUCKTHORN—T

A large drought-resistant shrub often used for tall hedges, but, usually as a background shrub. Clusters of black berries remain through winter.

Rhamnus frangula, GLOSSY BUCKTHORN—M

An upright shrub, with lustrous green leaves, interesting spotted bark and berries which turn from red to black in September.

Rhodotypos scandens, BLACK JETBEAD—M

White, raspberry-like flowers and shiny black berries. Neat habit of growth. Needs a protected location.

Rhus glabra, SMOOTH SUMAC—M

Smooth bark, and more compact dwarf growth than Staghorn Sumac. Leaves turn to a beautiful deep red in fall and ornamental red seed heads hang on all winter.

Rhus glabra cismontana, ROCKY MOUNTAIN SMOOTH SUMAC—L

Valuable for its brilliant fall color. A native of dwarf habit making it useful where a large sumac would get too tall.

Rhus glabra laciniata, CUTLEAF SMOOTH SUMAC—M

Very beautiful leaves with red stems. Of dwarf habit and attractive fall color.

Rhus trilobata, SKUNKBUSH SUMAC—M

Also called Lemonade, Aromatic or Three-Leaf Sumac. An informal, slow-growing, aromatic native shrub that can stand much drought and abuse.

Rhus typhina, STAGHORN SUMAC—T

Loose picturesque tree-like shrub with velvety stems and large tropical looking leaves. Makes a grand display of red fall color and the red seed heads persist all winter.

Rhus typhina laciniata, CUTLEAF STAGHORN SUMAC—M

Of sprawly habit but attractive foliage. The fall color is golden yellow and pink.

Ribes alpinum, ALPINE CURRANT—M

A neat shrub of slow dense growth. Can be trimmed for a low hedge. Will grow in partial shade.

Ribes aureum, GOLDEN CURRANT—M

Spicy-fragrant bright yellow flowers in May. Edible black or yellow berries. A useful native shrub for thickets and to attract birds.



Ribes cereum, WAX or SQUAW CURRANT—M

Dense, slow-growing native shrub of attractive shape. Thrives in dry places. Small pink flowers in June and scarlet currants in summer.

Ribes inerme, WHITESTEM GOOSEBERRY—L

Low-growing thorny native shrub with graceful habit and neat foliage. Good for covering banks and rocks. Valuable edible berries.

Robinia hispida, ROSEACACIA LOCUST—M

Of loose spreading habit similar to dwarf sumac. Beautiful large heads of pink pea-like flowers. Spreads from suckers.

Rosa blanda, MEADOW ROSE—L

Bright red upright stems, mostly thornless. Small pink flowers and persistent red fruits.

Rosa, FLORIBUNDA ROSES—L

These should be used more. They come in a good range of colors, and bloom all summer.

Rosa foetida bicolor, AUSTRIAN COPPER ROSE—M

Also known as the Denver University Rose. Covered in June with large single flowers of a coppery flame color, or sometimes distinct red and yellow petals. Probably the most striking bloom of any of our shrubs. Makes a bush of attractive shape and is hardy here.

Rosa foetida persiana, PERSIAN YELLOW ROSE—M

Double yellow June-flowering rose. Flowers more double than Harison and darker than either Harison or Hugonis. Shrub of rather irregular shape.

Rosa harisoni, HARISON YELLOW ROSE—M

A double yellow spring-flowering rose, similar to Persian but more hardy and free flowering.

Rosa rubrifolia, REDLEAF ROSE—M

Leaves and stem are dark red all summer. Very small pink flowers and persistent red fruit.

Rosa sayi, NATIVE RED STEM ROSE—L

Low-growing spreading shrub, similar to Meadow Rose but more dwarf. Useful for naturalistic plantings and covering banks. Effective in combination with Snowberries or Thimbleberries.

Rosa setigera, PRAIRIE ROSE—M

Small pink flowers and persistent red fruits. Of spreading habit, useful for ground cover and covering banks.

Rubus deliciosus, THIMBLEBERRY OR BOULDER RASPBERRY—M

One of the most valuable of our native shrubs. Gracefully arching thornless branches with attractive foliage. Large white rose-like flowers in May and June. Very hardy and easily grown.

Rubus idaeus strigosus, AMERICAN RED RASPBERRY—L

A native growing in loose, well-drained soil. Edible fruit.

Salix irrorata, BLUESTEM WILLOW—T

The silvery-blue stems of this rapid-growing native willow are especially attractive in winter. Small gray pussies burst out from their jet-black buds in early spring. Not as large buds as the pussy willow, but it seems to be resistant to the blight which damages the pussy willow. Several other species of shrub willows of various colors are native here and useful for planting.

Salix purpurea, DWARF WILLOW—M

A plant from arctic regions. Very slender twigs and delicate blue-green leaves. Suitable for specimen or clipped hedge under difficult conditions.





Sambucus canadensis, AMERICAN ELDER—T

A rapid growing shrub with attractive white flowers in summer and black edible fruit. There is also a cutleaf and golden variety which are useful.

Sambucus microbotrys, BUNCHBERRY ELDER—M

White flowers and beautiful red fruit. A native in high altitudes.

Shepherdia argentea, SILVER BUFFALOBERRY—T

A native shrub with narrow gray foliage similar to Russian olive and bright red, edible berries. Spreads from suckers.

Shepherdia canadensis, RUSSET BUFFALOBERRY—M

A low shrub growing under pines in high altitudes of our mountains. Bright red fruit and interesting russet leaves. Difficult to grow in alkaline soils.

Sorbaria arborea gabrata, SMOOTH TREE FALSE-SPIREA—M

Large neat blooms and later than the Ashleaf Spirea.

Sorbaria sorbifolia, URAL FALSESPIREA or ASHLEAF SPIREA—L

Large panicles of small white flowers in summer. Spreads from root suckers and looks ragged at times.

Sorbus scopulina, GREENES MOUNTAINASH—T

An uncommon native shrub which bears heads of white flowers and showy orange fruit similar to the European tree species. Very slow growing.

Spirea arguta, GARLAND SPIREA—M

Completely covered with masses of small white flowers in earliest spring. Hardy in most situations. Should be clipped back each year after blooming.

Spirea bumalda, CL. FROEBEL SPIREA—M

Of dwarf growth, sometimes winterkilling, but always producing enough new growth by blooming time in the fall. Flat heads of magenta flowers which are difficult to harmonize with other flowers, but, as it blooms in summer when there are few other things, it is very valuable.

Spirea prunifolia, DOUBLE BRIDAL WREATH SPIREA—M

Masses of small double white flowers in spring. A shrub of irregular growth and often full of dead wood.

Spirea thunbergii, THUNBERG SPIREA—M

A shrub of neat shape and feathery light-green foliage. Similar to Garland Spirea but not as desirable.

Spirea trichocarpa, KOREAN SPIREA—M

Flowers similar to Vanhoutte but about a week later. A shrub of irregular spreading habit, but one of the most beautiful.

Spiraea vanhouttei, VANHOUTTE or BRIDAL WREATH SPIREA—M

The most popular of all shrubs. Neat arching form, nice foliage and a grand display of white flowers.

Symphoricarpos chenaulti, CHENAULT CORALBERRY—L

A valuable introduction with neat leaves and gracefully arching stems. Small red berries dotted with white.

Symphoricarpos mollis, SPREADING SNOWBERRY—L

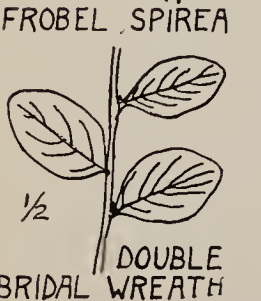
Low spreading growth. Snow-white berries in winter.

Symphoricarpos occidentalis, WESTERN SNOWBERRY—L

A coarse native shrub forming dense masses on moist slopes.

Symphoricarpos oreophilus, MOUNTAIN SNOWBERRY—L

A superior species of native snowberry of graceful arching habit. Nice pink flowers.



Symphoricarpos albus, COMMON SNOWBERRY—L

White berries in winter. Will grow in sun or shade. Spreads from root suckers.

Symphoricarpos orbiculatus, INDIAN CURRANT CORAL-BERRY—L

Also known as Missouri Buckbrush. The persistent red berries on arching stems are very ornamental. Grows in shade.

Syringa amurensis japonica, JAPANESE TREE LILAC—T

May be trimmed as a small tree. Cherry-like bark and large panicles of creamy-white flowers a few weeks after the common lilacs.

Syringa persica integrifolia, PERSIAN LILAC—T

Smaller leaves and stems than the common lilac. Bears large heads of fragrant flowers. May be sheared for a hedge.

Syringa vulgaris, COMMON PURPLE LILAC—T

Known by everyone. Useful for specimen, screen or hedge. May also be had in white and in a great variety of colors and characters known as the French hybrids. The one flowering shrub that will grow almost everywhere in the state where people live.

Syringa villosa, LATE LILAC—T

Very fragrant pinkish-lilac flowers in large clusters a week or two after the common lilacs have bloomed. Does not root-sucker so may be trained as a small tree. The species *josikea* is very similar to this.

Tamarix hispida, KASHGAR TAMARISK—T

Feathery, juniper-like foliage and large pink plumes of tiny flowers throughout the summer. Very drought and alkali resistant.

Viburnum burkwoodi, BURKWOOD VIBURNUM—M

Viburnum carlesii, KOREAN SPICE VIBURNUM—M

Very beautiful but tender new viburnums. Should only be planted in protected place on the north or east.

Viburnum dentatum, ARROWWOOD VIBURNUM—T

Slim graceful stems with white flowers in June followed by heads of black fruit. Will grow in shade.

Viburnum lantana, WAYFARING TREE VIBURNUM—T

A distinctive, slow-growing shrub. Has flat heads of white flowers followed by fruit which gradually turns from green through yellow, orange and red to black. Thickish crinkled gray-green leaves.

Viburnum lentago, NANNYBERRY VIBURNUM—T

A tall, slim shrub of neat habit for backgrounds or specimen. Has flat heads of white flowers and edible black fruit.

Viburnum opulus, Cl. COMMON SNOWBALL—T

The old familiar shrub of Grandmother's garden. Usually damaged by aphids in early spring but still useful.

Viburnum pauciflorum, MOOSEBERRY VIBURNUM—M

Of thin growth. Found in moist, shady places in our mountains.

Viburnum prunifolium, BLACKHAW VIBURNUM—T

Similar to Nannyberry but stiffer in habit and more difficult to grow here. White flowers and black edible fruit.

Viburnum trilobum, AMERICAN CRANBERRYBUSH VIBURNUM—T

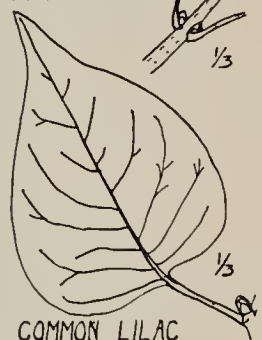
Leaf like the common snowball but of looser habit and bears flat heads of white flowers which are followed by persistent red berries. Tolerates shade. Species *opulus* is similar.



HYBRID PERSIAN LILAC



HUNGARIAN & LATE LILAC



COMMON LILAC



ARROWWOOD



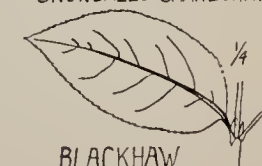
WAYFARING TREE



NANNYBERRY



SNOWBALL & CRANBERRY



BLACKHAW

March	April		May		June		
2nd half	1st half	2nd half	1st half	2nd half	1st half	2nd half	1st
Violas V				Matrimony Vine L			Swe
Pussy Willows W				Dogwood W			Mar
Grape Hyacinth B				Single Roses V			Nas
Crocus V				Roses V			Bac
Early Tulips V				Siberian Iris B			Hol
Hyacinth V				Mockorange W			Per
Narcissus Y				Daylilies Y			
Scillas V				Painted Daises V			
Snowdrops W				Columbine B			
Winter Jasmine Y				Achillea W			
Forsythia Y				Mertensia B			
Spiraea arguta W				Late Honeysuckle W			
Fl. Almond P & W				Korean Spirea W			
Korean Barberry Y				Rose Acacia P			
Nanking Cherry P & W				Ninebark W			
Fl. Currant Y				Cotoneaster P			
Siberian Peashrub Y				Beautybush P			
Japanese Quince R				Bladder senna Y			
Darwin Tulips V				Russian Olive Y			
Plums W				Anchusa B			
Apples P				Tiger Lily O			
Double Spirea W				California Poppy Y			
Lilac Honeysuckle				Snapdragon V			
Lilacs L				Privet W			
Bush Honeysuckle P				Japanese Lilac L			
Dwarf Iris B				Amorpha L			
Redleaf Rose P				Petunia B			
Spiraea van houtii				Shrubby cinquefoil			
Bird Cherry W				Annual Popp			
Flowering Crabs W & R				Shasta Dais			
Jetbead W				Wisteria P			
Wild Roses P				Buckthorn			
Serviceberry W				Climbing Ro			
Bleedingheart P				Euonymous			
Sandcherry W				Arrowwood			
Blue Flax V				Sunflower			
Thimbleberry W				Dianthus			
Cerastium W				Campanula			
Iceland Poppies V							Elde
Primrose V							Bill
Hawthorn W							Lark
Cherries W							Purp
Phlox subulata P							CHI
Fl. Plum P							Ca
				Native White Clematis			So
				Sakhalin Honeysuckle R			Val
				Horse Chestnut W			H
				Chinese Chestnut W			R
				Mtr. Ash W			F
				Fr. and Villosa Lilac L			T
				Pearl Bush W			C
				Wayfaringtree W			C
				Nannyberry W			G
				Cranberrybush W			S
				Tall Iris V			B
				Peonies V			
				Oriental poppies O			
				Chokecherries W			
				Bush Cinquefoil Y & W			

SEASON OF PLANT COLOR IN DENVER

Flowers,
Fruit, Foliage
and Stems

August			September		Oct. to March
d half	1st half	2nd half	1st half	2nd half	
			Roses R		Fruit
m W			Privet Bl		
			Sumac R		
Y			Cranberrybush R		
tons B			Coralberry R		
V			Snowberries W		
lox V			Mountainash O		
inrod Y			Euonymus P		
lant L			Cotoneaster Bl & R		
n Barberry R		Fruit	Englemann Ivy B		
ng Cherry R			Bittersweet R		
Honeysuckle R			Russianolive Y		
Cherry R			Late Honeysuckle R		
Cherry Bl			Catalpa Br		
ies R			Hoptree W		
ndytuft V		Flowers	Viburnum Bl		Fall Foliage
drangea W			Sumac R		
nista Y			Cinnala Maple R		
ysostegia V			Korean Barberry R		
umpet Vine O			Euonymus P		
Dahlias V			Hawthorne Y		
Statice L			Spireas Y		
Matris L			Viburnums R		
Russianolive Gy		Foliage	Cotoneasters V		
Leadplant Gy			Roses Y		
Buffaloberry Gy			Dwarf Ninebark Y		
Seabuckthorn Gy			Dolge Crab R		Fruit
Redleaf Plum R			Honeylocust Br.		
Redleaf Barberry R			Bladdersenna W		
Redleaf Rose R			Buckthorn Bl		
Redsilver Crab R & W			Kentucky Coffeetree Br		
Golden Elder Y			Red and Yellow Dogwood R & Y		
Golden Ninebark Y		Flowers	White Birch W		Stems
Meadowrue W			Bluestem Willow B & Gy		
Heleopsis Y			Meadow Rose R		
Asters L & W			Yellow Willow Y		
Tritoma O			Bolleana Poplar G		
Helenium Y			All Evergreens G		
Varnish Tree Y			Halls Honeysuckle G		
Althea V			Vine Euonymous G		
Silverlace Vine W			Mahonia R & G		
Four O'Clock Vine V					
Cockscomb R					
Portulacas V					
Butterflybush L					
Cannas V					
Verbenas Y					
Salpiglosis V					
Morningglory B					
Salvia R					
Moonflower B					
Goldflame Moneysuckle Y					
Virginal Mockorange W					
Buddleia L					
Sophora W					
Seedum spectabilis L					
Snowberries W					
Chrysanthemums V					
Autumn Clematis W					
Aralia W					

KEY TO COLORS

G	Green
Gy	Gray
L	Lavender or Purple
O	Orange
B	Blue
Bl	Black
W	White
R	Red
P	Pink
Y	Yellow
Br	Brown
V	Various

SHRUBS CLASSIFIED AS TO HEIGHT AND USE

M—For use in the mountains. P—For hot, dry, or plains use. I—Irrigated areas.
It—Will grow in irrigated areas, but tender or unreliable. S—Will grow in partial shade.

TALL—OVER 6 FEET

Acer, ginnala, Amur Maple—I
Acer glabrum, Rocky Mtn. Maple—IM
Acer tataricum, Tatarian Maple—I
Alnus tenuifolia, Thinleaf Alder—IM
Amelanchier sp., Serviceberry—IM
Aralia spinosa, Devils-walkingstick—It
Betula fontanalis, Water Birch—IM
Caragana aborescens, Sib. Peashrub—IMP
Cercis canadensis, Eastern Redbud—It
Cornus racemosa, Gray Dogwood—IS
Corylus cornuta, Hazelnut—ItMS
Cotinus coggygria, Smoketree—It
Crataegus coloradensis, Colo. Haw.—IMP
Crat. crusgalli, Cockspur Hawthorn—IP
Crat. intricata, Thicket Hawthorn—I
Crat. mollis, Downy Hawthorn—IP
Crat. oxycantha, English Hawthorn—I
Crat. oxy. Cl, Pauls Scarlet Hawthorn—It
Crat. phaenopyrum, Washington Haw.—I
Crat. saligna, Willow Hawthorn—I
Elaeagnus angustifolia, Russianolive—IMP
Euonymus atropurpureus, Wahoo—IS
Euon. europeus, European Euonymus—IS
Forestiera neomexicana, Mtn. Privet—IM
Forsythia spectabilis, Showy Forsythia—IS
Hibiscus syriacus, Shrubalthea—I
Hippophae rhamnoides, Seabuckthorn—It
Kolkwitzia amabilis, Beautybush—I
Ligustrum o. regalianum, Regal Privet—IS
Ligustrum vulgare, European Privet—IPS
Lon. Korolkowi, Blueleaf Honeysuckle—I
Lon. maackii, Amur Honeysuckle—I
Lon. morrowi, Morrow Honeysuckle—IPS
Lon. tatarica, Tatarian H'suckle—IMPS
Lon. zabeli, Red Honeysuckle—IP
Philadelphus coronarius, Sweet Mo.—IP
Phila. virginialis, Virg. Mockorange—IS
Physocarpus opulifolius, Com. Ninebark—S
Prunus americana, Wild Plum—MP
Pr. americana Cl., Purpleleaf Plum—I
Prunus padus, Maydaytree—It
Pr. pennsylvanica, Pin Cherry—IM
Pr. virginiana demissa, Chokecherry—IMP
Ptelea trifoliata, Hoptree—I
Rhamnus cathartica, Buckthorn—IPS
Rhus typhina, Staghorn Sumac—IPS
Salix irrorata, Bluestem Willow—IMS
Sambucus canadensis, Elder—IPS
Shepherdia argentea, Buffaloberry—IMS
Sorbus scopulina, Mountainash—IMS
Syringa a. japonica, Tree Lilac—I
Syr. persica integri., Persian L.—IMP
Syringa vulgaris, Common Lilac—IMPS
Syringa villosa, Late Lilac—IMS

Tamarix hispida, Tamarisk—IMP
Virburnum dentatum, Arrowwood—IS
Virburnum lantana, Wayfaringtree—I
Virburnum lentago, Nannyberry—S
Virburnum opulus, Snowball—IMP
Viburnum prunifolium, Blackhaw—I
Viburnum trilobum, Cranberrybush—I

MEDIUM—3 TO 6 FEET

Acanthopanax spinosus, Aralia—ItS
Amorpha fruticosa, Indigobush—IP
Berberis koreana, Korean Barberry—IM
Buddleia sp., Butterflybush—I
Cercocarpus mont., M'tainmahogany—IMP
Chaenomeles japonica, Fl. Quince—IP
Colutea arborescens, Bladdersenna—It
Cornus s. coloradensis, Dogwood—IMS
Cor. s. flaviramea, Yellowtwig D.—ItS
Cotoneaster, acutifolia, Peking Cot.—MPS
Cot. integerrima, Europ'n Cotoneaster—IS
Euonymus alatus, Winged Euonymus—IS
Exochorda racemosa, Pearlbush—It
Fallugia paradoxa, Apacheplume—IMP
Forsythia suspensa, Goldenbells—IS
Holodiscus dumosus, Rockspirea—IMP
Hydr. paniculata, Peegee Hydrangea—It
Jamesia americana, Cliff Jamesia—M
Lespedeza thunbergi, Desmodium—I
Lonicera involucrata, Bearberry Hs.—MS
Lonicera m. sach., Sakhalin H'suckle—I
Lon. syringantha, Lilac Honeysuckle—I
Lycium halimifolium, Matrimonyvine—MP
Phil. lemoinei, L. Mockorange—IS
Physocarpus opulifolius, Df. Ninebark—IS
Prunus besseyi, Sandcherry—I
Prunus cistena, Purple Plum—I
Prunus glandulosa, White Fl. Almond—IP
Pr. glandulosa, Pink Fl. Almond—IP
Prunus tomentosa, Manchu Cherry—IM
Prunus triloba, Dbl. Fl. Plum—IP
Purshia tridentata, Antelopebrush—M
Rhamnus frangula, Glossy Buckthorn—It
Rhodotypos scandens, Jetbead—It
Rhus glabra, Smooth Sumac—IS
Rhus trilobata, Skunkbush Sumac—MP
Rhus typhina lacini., Cutleaf Sumac—IS
Ribes alpinum, Alpine Currant—IMPS
Ribes aureum, Golden Currant—IMP
Ribes cereum, Wax Currant—MP
Robinia hispida, Roseacacia—IP
Rosa foetida bicolor, Aust. Copper—IM
R. foetida persiana, Persian Rose—IM
R. harisoni, Harison Rose—IM
Rosa rubrifolia, Redleaf Rose—I
R. setigera, Prairie Rose—IP
Rubus deliciosus, Thimbleberry—IMS

Salix purpurea, Dwarf Willow—I
 Sambucus microbotrys, Bunchberry—M
 Shepherdia cana., Russet Buffaloberry—M
 Sorbaria arborea glabra, Falsespirea—I
 Spiraea arguta, Garland Spirea—IP
 Sp. bumalda, Cl., Froebel Spirea—I
 Sp. prunifolia, Dbl. Spirea—IS
 Sp. thunbergi, Thunberg Spirea—I
 Spirea trichocarpa, Korean Spirea—IMP
 Sp. vanhouttei, Bridal Wreath—IMP
 Viburnum burkwoodi, Burkwood Vib.—It
 Vib. carlesi, Koreanspice Vib.—It
 Vib. pauciflorum, Mooseberry Vib.—M

LOW—UNDER 3 FEET

Amorpha canescens, Leadplant—IP
 Amorpha nana, Dwarfindigo—IP
 Arctostaphylos uva-ursi, Kinnikinnick—M
 Berberis thunbergi, Jap. Barberry—IPS
 Berb. t. atropurpurea, Redleaf B'berry—IS
 Berberis t. Cl., Columnberry
 Caragana aurantiaca, Dwf. Peashrub—IMP
 Cara. pygmaea, Pygmy Peashrub—IMP

Ceanothus velutinus, Mtn. Balm—M
 Hibiscus palustris, Rosemallow—I
 Ligustrum vulgare, Cl., Lodense Privet—I
 Lonicera spinosa alberti, Thorn Hkle.—I
 Physocarpus m'ogynus, Mtn. Ninebark—M
 Pot. fruticosa, Bush Cinquefoil—IMS
 Potentilla f. veitchi, Veitch Cinquefoil—I
 Mahonia repens, Oregongrape—M
 Prunus tenella, Russian Almond—It
 Rhus glabra cismontana, R. M. Sumac—IM
 Rhus glabra laciniata, Cutleaf Sumac—I
 Ribes inerme, Whitestem Gooseberry—IMS
 Rosa blanda, Meadow Rose—IP
 Rosa Cl., Floribunda Rose—I
 Rosa sayi, Wild Rose—MP
 Rubus idaeus strigosus, Raspberry—M
 Sorbaria sorbifolia, Ashleaf Spirea—I
 Sym. chenaulti, C. Snowberry—I
 Sym. mollis, Spreading Snowberry—IPS
 Sym. occidentalis, Western Snowberry—PS
 Sym. oreophylus, Mtn. Snowberry—IMS
 Sym. albus, Common Snowberry—IMPS
 Sym. orbiculatus, Coralberry—IMPS

MATERIAL SUITABLE FOR MAKING CLIPPED HEDGES

Arranged about in order of preference. For unclipped screens will grow to several times size shown here. I—Irrigated areas. M—Mountains. P—Plains.

TALL—4-8 FEET

Russianolive IMP
 Chinese Elm IMP
 Persian Lilac LP
 Siberian Peashrub P
 Bush Honeysuckles MP
 Thicket Hawthorn I
 English Hawthorn I
 Amur Maple I

Com. Buckthorn IP
 Mulberry P
 Honeylocust P
 Wild Plum MP
 Water Birch IM
 Euonymus I
 Purple Plum I
 Tree Lilac I

Late Lilac I
 Common Lilac IMP
 Silver Cedar IMP
 Colo. Spruce IM
 Black Hills Spruce I
 Bristlecone Pine IM
 Pinyon Pine IM

MEDIUM—2-6 FEET

English Privet IP
 Thompson Privet IP
 Polish Privet IP
 Peking Cotoneaster IMP
 Spirea arguta I
 Spirea Vanhoutte IP
 Pfizer Juniper IP

VonEhron Juniper I
 Forestiera M
 Skunkbush Sumac MP
 Oneseed Juniper IMP
 Mugho Pine IP
 Jap. Table Pine I
 Redtwig Dogwood IMP

Winged Euonymus I
 Lemoine Mockorange I
 Dwarf Ninebark I
 Mtn. Mahogany MP
 Flowering Quince I

LOW—1-3 FEET

Columnberry I
 Lodense Privet I
 Alpine Currant IMP

Jap Barberry IP
 Redleaf Barberry I
 Dwarf Peashrubs IP

Bush Cinquefoil IM
 Chenault Snowberry I

As the mild days appear, check the soil for moisture. Water dry soil as soon as the frost is sufficiently out to allow the water to soak in. Don't yield to the temptation to walk over or work with soil which is very wet. If you do this with heavy soil it will bake and bother you all summer.

VINES

M—For use in the mountains. P—For hot, dry, or plains use. I—Irrigated areas. It—Will grow in irrigated areas, but tender or unreliable. S—Will grow in partial shade.

Campsis radicans, COMMON TRUMPET CREEPER—It
Large trumpet shaped scarlet flowers in fall. Slow-growing and tender when young, but in age becomes large and woody.

Celastrus scandens, AMERICAN BITTERSWEET—It
Slow-growing with attractive red berries. Plant more than one for best fruiting.

Clematis crispa, CURLY CLEMATIS—It
A rather frail vine, but bears beautiful purple bells.

Clematis jackmani, JACKMAN CLEMATIS—It
The most popular large flowered clematis. Half-hardy but very much worthwhile. There are other colors in large flowered clematis which will bloom in protected places.

Clematis ligusticifolia, WESTERN VIRGINSBOWER—IMP
A rapid growing native climber which is covered with small white flowers in summer and woolly white seed heads in fall. More hardy than the Sweet Autumn, but not scented.

Clematis orientalis, ORIENTAL CLEMATIS—IM
Very hardy, having naturalized itself near Idaho Springs. Small yellow flowers and attractive seed heads.

Clematis paniculata, SWEETAUTUMN CLEMATIS—I
Bears a profusion of fragrant white flowers in autumn.

Clematis tangutica obtusiuscula, GOLDEN CLEMATIS—I
Yellow flowers and fuzzy seed heads. Hardy.

Clematis texensis, SCARLET CLEMATIS—I
Small, bright, red and white, half-opened flowers. Tender but makes a good growth each year.

Euonymus fortunei radicans, COMMON WINTERCREEPER
EUONYMUS—I

An evergreen vine, clinging to walls or trailing. Usually grows better in the shade. Attractive fruit.

Hedera helix, ENGLISH IVY—I
Dark-green ever green leaves. Only hardy on the north side or in shade. Adapted types will cling to a rough wall. Makes a good low ground cover.

Lonicera heckrottii, EVERBLOOMING HONEYSUCKLE—I
Flame-red trumpets lined with gold. Rich green leaves which persist until late winter. Blooms almost continually. A selected variety is called Goldflame.

Lonicera japonica halliana, HALLS JAPANESE HONEYSUCKLE—IP

Deep green foliage held well into winter. Fragrant white flowers. Useful for climbing on fences or as a ground cover.

Lonicera sempervirens, Cl. SCARLET TRUMPET HONEYSUCKLE—I

Not as vigorous or fragrant as Halls, but the flowers are more attractive.

Parthenocissus engelmani, ENGELMAN VIRGINIA CREEPER—IMP

The common vine which clings to a rough wall. Usually grows too rank and becomes a nuisance.



JACKMAN CLEMATIS



SCARLET CLEMATIS



SWEET AUTUMN CLEMATIS



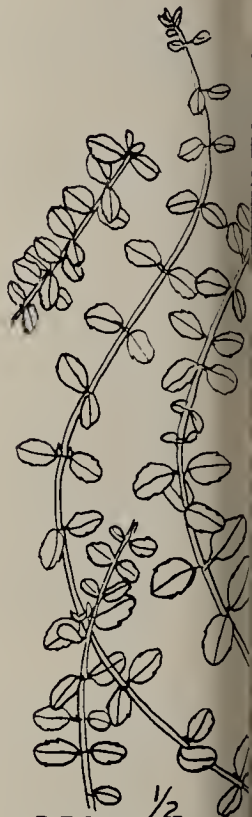
HALLS JAP. HONEYSUCKLE



SCARLET TRUMPET HONEYSUCKLE



WINTERCREEPER



BABY WINTERCREEPER

Parthenocissus saintpauli, ST. PAUL VIRGINIA

CREEPER—I

Slower growing and neater than Engelman. About the only good vine which will cling to a south wall.

Parthenocissus tricuspidata, JAPANESE CREEPER or BOSTON IVY—I

The neatest and slowest growing of the ivies. Only hardy on the north or shaded places. Fine fall color.

Polygonum auberti, SILVERVINE FLEECEFLOWER—IP

A hardy quick-growing vine, hardy almost everywhere.

Covered in summer with a cloud of small white flowers.

Rosa, Cl. CLIMBING ROSES—I

A great variety of colors which may be trained on trellis or fence.

Vitis, Cl. BETA GRAPE—IMP

This is a hybrid of Wild and Concord grapes. Grows vigorously and produces grapes good for jelly and juice, almost every year.

Wistaria frutescens, AMERICAN WISTARIA—It

Slow growing and slow to bloom, but worth waiting for when it comes.



Fruits Attractive To Birds

Soft fruits eaten when ripe by such birds as Robins, Finches, Bluebirds, Solitaires and Grosbeaks.

(Preferred)	(Eaten later as second choice)
Mulberries	Buffaloberry
Pie cherries	Currants
Pin cherries	Crapples
Black cherries	Gooseberries
Chokecherries	Mountain ash
Elderberries	Sand Cherry
Manchu cherries	Wild plums
Raspberries	
Wild Grapes	

Dry or persistent fruits eaten in winter or spring by such as Waxwings, Robins, Flickers, Starlings.

(Preferred)	(Also eaten as second choice)
Russianolive	Buckthorn
Engelmann Ivy	Coralberry
Nannyberry	Snowberry
	Euonymus
	Hawthorn
	Highbush Cranberry
Dogwood	Sumac
Privet	Juniper
Rose hips	Hackberry
Barberry	

Dry fruit important for such as sparrows, finches and grosbeaks.

Ash Boxelder

Important for Woodpeckers, Waxwings and Finches. Inferior apples left on the tree to dry and decay.

Toxic, but not always lethal. Eaten by immature robins.

Bush honeysuckle berries.

How Good Are The New Roses?

Last year's All-America Selections on Roses (1949) were: *Capistrano*, a large, fragrant, rose-pink, disease-resistant; *Fashion*, a coral-pink floribunda, free-blooming; *Mission Bells*, sturdy deep salmon pink with long stems; and *Sutter's Gold*, semi-double deep orange fragrant. How good are they for our western climate?

Mr. Arthur Simpson, superintendent of Caldwell, Idaho, Rose Gardens, reports as follows:

"Sutter's Gold and Capistrano seem to justify top billing, Mission Bells is in my opinion just another good pink rose, and Fashion, while unusual and interesting, does not excite my enthusiasm."

Scott Wilmore, while not having had a chance to grow them until next year, feels that both Sutter's Gold, as a hybrid tea, and Fashion, as a floribunda, are outstanding roses.

No awards have been made for 1950.

M. WALTER PESMAN.



"Plants appear to have more sense than most people—they turn to the light."—George W. Olinger.

WILLIAM W. WILMORE

1861-1950

IT was a long and tedious trip from Wheatridge to Denver in those early days,—1883. The roads were none too good, often muddy, and traveling by wagon was a slow process.

But young William was an early riser, and a tireless worker. So he would get up in the early, early dawn, pick dahlia blossoms with the aid of a coal oil lamp, make up bouquets, and start out on his long journey with his father's vegetable wagon.

There were no flower shops in Denver at the time, and few greenhouses: young Wilmore was the pioneer initiating the immense flower trade for which Denver now is famous. As a dahlia specialist he became a national figure, recognized by all dahlia growers.

It all started as a hobby. William's father had had a hard time of it, first due to the 1873 Panic, then because grasshoppers ate up the vegetable crops in 1874 and 1875. When the young lad was put in charge of his father's ten-acre tract he added dahlias to the strawberries and other vegetables. He made them pay, and he gradually developed dozens and later, hundreds of new varieties; the final record shows close to five hundred new dahlias through the years.

That work, however, was done on his own place at Wadsworth and West 38th; he bought ten acres there in 1884. Then things began to happen. Having a house all built for his bride, he married an Iowa girl, Josephine Ely, in 1886.

"In 1893 he exhibited dahlias for the first time at the World Columbian Exposition in Chicago, and at this time published what was probably the first dahlia catalog in the United States". (from the Dahlia Bulletin).

October 4, 1892 the Denver Times

newspaper sent out a reporter to his showplace who pronounced it the finest sight and the finest dahlia collection in the United States. He was then growing 200 varieties.

Some of these varieties, by the way, furnish a running history of Denver's and Colorado's garden lovers. Among them are John Elitch, Dr. and Mrs. Henry Sewall, Dr. I. B. Perkins, (1913), Chancellor Buchtel, (1925), J. D. Long, (1922), Mrs. Verner Z. Reed, (1933), and Lucy Davis, Wilmore's daughter, (1923). Pahaska (1922) was named after the Indian name of Buffalo Bill. Does Andy Gump (1924) suggest a head held high on a stiff neck? Sweetheart's Bouquet (1920) is still grown. Bon Ton is among the best. A. L. Chace and Chas. Clayton should be named.

No wonder W. W. Wilmore was awarded "the gold medal of the American Dahlia Society on September 27, 1936, for his service and devotion to the dahlia". At the time he had celebrated his fiftieth year as a dahlia grower; altogether he continued for 63 years.

In 1907 he published "The Dahlia Manual," an outstanding booklet on dahlia culture; 3500 copies were sold, in two editions.

Much more could,—and should—be said about our horticultural pioneer. We are apt to forget the primitiveness of the early days, until we are suddenly reminded that young William shot a 4½ ft. bobcat while he was living in Valverde, at thirteen years old. We then remember that the old type of dahlia was the stiff, tight kind, and that Wilmore introduced many cactus dahlias, decorative dahlias, and,—the latest introductions,—the Ridge-more, (a combination of 'Wheatridge'

and 'Wilmore'), a miniature dahlia, only three feet tall, and with choice 2½ inch blossoms in various colors.

We suddenly now realize that the name Wilmore has come to stand for the first class nurseryman type in Denver, just as the French Lemoines, England's Henderson, and our American Downings. The name has become a symbol. W. W. Wilmore has, thru his long and enviable career, identified the name with dependability, hard work, enterprise, cooperativeness, and leadership.

M. WALTER PESMAN

With a large part of the earth's surface now waste desert or fast becoming so, the result of uncontrolled ignorant and selfish exploitation, the time is here when only a complete knowledge of the plant resources of the world, followed by their sane safeguarding, development and expert utilization, will avert untold disaster to the human race.

From an article in *American Forests*, December, 1949 by Harlan P. Kelsey called "Arborways for America."

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HAVE YOU A CHRISTMAS ROSE?

MAUD McCORMICK

CHRISTMAS roses are in bloom now in a few rock gardens and perennial borders here in Denver. They began blooming this year before the end of October and will continue until they are followed by the Lenten rose in late February and March. No other hardy plant defies bitter weather so bravely and lifts its large, pearly blooms proudly in the sunshine after drooping limp and apparently lifeless on an icy winter morning. No winter bloom from any other plant makes so spectacular a display as the abundant blossoms on a well-established clump.

Originally wild flowers in ancient Greece and along rocky slopes in Europe and western Asia, they flourish in humid sections of our country. Best-known and most commonly grown, the Christmas rose, *Helleborus niger*, is extensively cultivated in the mists and moisture of the Puget Sound region, along the Great Lakes and in the East where the atmosphere is similarly humid and rainfall is ample. We read of pearly drifts of the waxy bloom under apple trees, in front of shrubbery, or massed in front of a perennial border. In the favored sections, too, innumerable plants are grown in cold frames as commercial cut flowers. This treatment encourages the stems to stretch up toward the light and protects the exquisite bloom from bruising by harsh winds and cutting sleet.

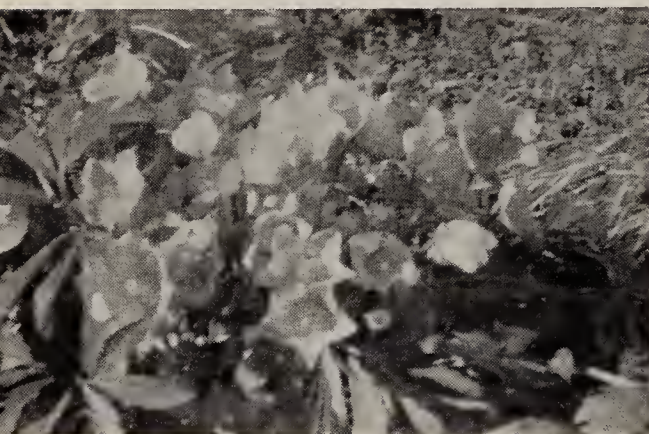
Naturally harder to establish in our arid and changeable climate, no true hellebores will ever be as abundant or easily grown here as zinnias. Beautiful specimens may be found, however, in well-cared-for gardens in all parts of the city. In mid-December I saw a clump of at least fifty blossoms with innumerable buds clustered about its base. In the same garden, I recall an

equally striking picture of the wine-dark Lenten rose, *H. orientalis*, against a background of fresh-fallen snow. That was a year ago in March.

As the plants are always slow to adjust themselves to new conditions after transplanting, it takes several years to establish a large, floriferous clump. The occasional flowers that grace the smaller plants their second and third years, however, are ample reward for the task of planting them. It is unlikely that we shall ever see great drifts and masses of the plants here in many of our gardens, but we can all develop single specimens to enliven the view from a favorite window during the winter months and even, with a little care, keep them unmarred during our severest storms by remembering to cover them until lashing winds and driving sleet are past.

The true Christmas rose, *H. niger*, comes in a number of varieties, most highly praised of which is *H. niger altifolius*. By persistent effort this can be obtained, though many nurserymen list the plant only by species, and some, I fear, sell under variety name plants hardly meriting that distinction. Though I have bought *altifolius* three times, I have never yet achieved flowers "from three to five inches in diameter and on stems reaching from twelve to fifteen inches in length." My plants, however, are still young and are admittedly growing under adverse conditions. At present they fit better the description of the species than of the variety *altifolius* as do most of those that I have seen here. It is quite possible, of course, that the extremely large flowers and stems of phenomenal length are produced, even in favored climates, in the controlled conditions of a cold frame instead of in the garden location recommended as ideal, in the open under deciduous shrubbery.

To keep bloom in the garden until the spring bulbs take over, there is the later-blooming *H. orientalis*. Known as the Lenten rose, it can be expected to start blooming in February and continue through Lent. This species as usually grown has countless wine or purplish flowers also in stemless clumps and also makes an unusual picture in the winter garden. Less often grown than the Christmas rose, it has interested the hybridizers even more and hybrids can now be secured in white as well as in several maroon shades and in a less striking pale green, a tint frequently found in lesser known species of hellebores. Some of the Lenten hybrids, I am told, are even white flecked with black dots. As its



cultural requirements are similar to those of the Christmas rose, it should be more frequently grown. As a hobby flower, it is even better for its seeds are far more likely to mature here and crosses may produce specimens lovelier and more interesting than any now in existence. It takes patience, of course, as seed may lie dormant nearly a year and plants produce no bloom before their third year.

As hellebores are a humus-loving plant, plenty of leaf-mold or its equivalent should be incorporated into a deeply dug, enriched soil, with excellent drainage. The black roots go down at least a foot and do not spread out

in surface-feeding masses. Hence watering should always be thorough. Sprinkling pleases the thirsty foliage in our dry air, but soaking is required by the fleshy roots. They are tolerant of a slightly alkaline soil, though they prefer a neutral one. A root-rot encouraged by the use of too much rich manure in the soil seems to be the only disease from which they suffer. Their worst enemies are the slugs that love moisture and mulches as well as they do.

Experts disagree as to the best time to divide and move the plants. As whatever tendency to dormancy they have comes in midsummer, I incline to favor the group that votes for spring transplanting. Plants shipped to me still in full bloom from the Puget Sound country have done quite well in my garden. Besides, I have had the satisfaction of seeing what kind of bloom I can expect as they develop into sturdy plants. It seems reasonable to suppose that spring transplanting allows the plant time to develop its roots and establish its crown before its next blooming period.



We'd like to issue a word of caution to lovers of the Christmas Rose. There are some people who are allergic to it. If you think you may be one of those, it would be well to protect your hands while handling it.



THANK YOU

This year the membership committee has confined their efforts to the sending out of statements to all members. To the date of going to press the response has been very gratifying. We are also pleased to note that many members have raised their class of membership, which will enable us to extend considerably the work that we are doing. We thank you all.—Mrs. Alice McWhinney, Chairman.

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THE tree technician practices intensive pruning and trimming, in thinning out and shaping up the crown of the tree, and in building up a sound framework of branches and limbs. This is done for aesthetic purposes or for control of the height and spread of the tree where necessary. Trees are also thinned of excessive growth to allow free passage of strong winds through their upper crowns, and to reduce injury from ice and sleet.

Dead wood, intersecting and unbalanced limbs should be properly removed or pruned. To promote proper healing, all wounds and cuts of any large size should be painted with an approved commercial wound dressing; as every unprotected cut is a potential source for entry and spread of disease and wood-rotting fungi.

Proper cavity-filling (or so-called surgery) treatment may be given to trees where inroads of decay threaten their stability. Mechanical bracing, with cables and braces, is also used to correct structural weaknesses. Many valuable trees are, too, now protected by lightning systems. The tree expert of today should be quite familiar with the many aspects of chemotherapy.

These specific operations are highly technical and are dependent upon a skilled operator. They are not generally warranted, because they involve considerable expense, unless the trees possess high aesthetic or historic value. However, trees not thought to be worth such intensive and expensive treatment may often be given less costly first aid to prolong their effective life, until such time as they may be removed and replaced.

The tree expert must be able to diagnose fertilizer troubles and to

know the effects of soil moisture and aeration deficiencies, which are common conditions of most trees not grown under natural forest conditions. Valued shade trees, lacking in vigor and weakened from insects, disease, heat and drought, generally need deep-feeding to promote renewed healthy growth. Keeping the trees healthy by applying sufficient fertilizer and water is usually the best preventative measure against most ailments. Tree-feeding is a highly specialized job and must be done with modern, mechanical equipment, using special chemical fertilizers. The proper seasonal period and soil moisture conditions are very important when doing this job.

Arborists are also called upon to perform soil aeration operations, seeing that proper adjustments are made when normal air and water tables are disturbed by construction features such as walks, roads and sewers, or to install drainage systems when the water table is raised. He must likewise be able to treat trees for many types of mechanical injuries such as borer, animal and automobile damage, frost split and sunscald. Salt water, salt sprays and damage resulting from leaky gas mains are common in many areas.

Other services performed include the proper annual, summer-season shearing of foundation and hedging evergreens, so necessary to keep them dense and shapely and to control their growth.

There is a correct seasonal period to do this work. Even the simple operation of tree banding (use of barrier bands), which has restricted value only, should be correctly done by a reliable expert to be effective.

Home owners should learn something about general spraying practices,

the seasonal control periods and nature of the chemicals used for insects and disease. Summer contact insecticides such as nicotine sulphate, rotenone and pyrethrum are employed on some soft-bodied insects as aphids, young leaf hoppers and scale insects, which feed by sucking the plant juices. These chemicals are applied as dusts or sprays in any of the insect's life stages.

Insects which feed by chewing and swallowing their food are combatted with so-called stomach poisons. Arsenate of lead, DDT, (contact in some cases) and chlordane are examples. They are applied as dusts or sprays, just prior to, or during the insect's feeding periods.

Dormant contact sprays are very special sprays used on a wide variety

of insects during their winter stages, especially scale insects and overwintering insect eggs. They are usually miscible oil (petroleum) emulsions or lime sulphur. Care must be taken to insure perfect emulsions or concentrations of these sprays, in order to kill the insect without damaging the trees, and they must be applied when warm temperatures prevail.

Then there are many tree diseases which are controlled by protective treatment with such fungicides as Bordeaux mixture, the sulphurs and ferri-mate. The wettable sulphurs are also useful as a spray or dust used against the summer infestations of red spider and spider mites, which in time will kill valuable evergreens and other plants if left unchecked.



OPEN SEASON ON MENODORA

QUEER things have happened,—and may yet. Some day somebody may go hunting for Menodora,—and find it,—just on an indicative hunch. And the place to look for it is Canon City: Menodora scabra, belonging to the Olive Family, as do Ash and Forestiera.

Here is how. Professor Ellsworth Bethel, who used to be curator of the herbarium at the State Museum of the Colorado Capitol, among other things,—Professor Bethel owned one of the now rare copies of Rydberg's Flora of the Rocky Mountains and Adjacent Plains. It contains a number of scribbles in his handwriting, concerning various native plants in Colorado.

That copy now belongs to Dr. Hazel M. Schmoll of Ward, Colorado, who used to be his assistant,—also among other things. It was loaned to M. Walter Pesman, when he was working on "Meet the Natives". And that's how a note was discovered, in Dr. Bethel's handwriting, concerning Men-

odora scabra A. Gray. "Colo.-Canon City", that's all it says. But there's the hint.

Menodora scabra is supposed to be restricted to "w Texas, s. Utah and Arizona", according to Rydberg. But Benson and Darrow, in their Manual of Southwestern Desert Trees and Shrubs, also mention southwestern Colorado and, again, Canon City.

So, nature lover-sleuths, here is your chance! There is no open season on Menodora particularly, but one specimen of it for the Herbarium at Horticulture House, and a number of good photos, will give you a lot of satisfaction, and will set ajar another door to the vast room of interesting secrets in Mother Nature's custody.

* * *

P.S. There is a picture in Benson and Darrow, on page 271. It is a small shrub, 2-3 ft. tall, with small, simple leaves, small yellow flowers and twin-fruit.



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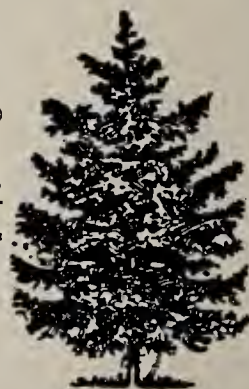
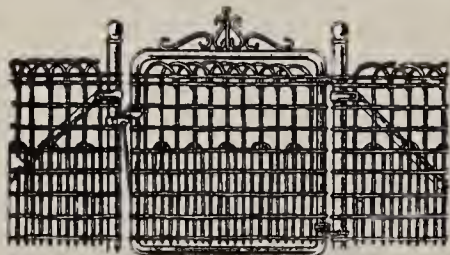
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FEBRUARY GARDENING

NO one in Colorado may predict what the weather will be in February. Some years it may warm up early in the month, the frost may leave the soil and transplanting of woody plants may begin. Other years there may be the most disagreeable weather of the winter in February. All good gardeners will be prepared to start work outdoors if we have one of the favorable years and will be content to plan and dream indoors if we draw a bad month. Remember though, that all "bad" weather to be out in may not be bad for plants. Additional moisture may assure good growth later, and continued cold weather may hold the early plants back so that we will be assured of good bloom later.

As a traveller preparing for a long trip, it would be well now to check all your equipment and be sure that all is in readiness for the year's garden work. In August we wish for a let-up of the continual round of water-weed-spray, but now we are looking forward with impatience for the time for these chores to start again. While you are waiting, bring in a few twigs of the early flowering shrubs and get a preview of the grand display to come later. Forsythia tops the list, and plums, pussy-willow or spirea are sometimes effective.

Plans should now all be definitely made, the necessary plants for new work or remodeling ordered. As short let-ups come in the weather the garden may be cleaned up, manure brought in and possibly some warm spots spaded up. Look for the first unfolding leaves of the bush honeysuckle, the tips of tulips showing through on the south side and the first crocus bloom. Any of these first signs of spring encourage the real gardener. Now is the time that you will appreciate those tulips that you potted up last fall and covered over in the old cold frame. Brought into the house now they should soon be in bloom.

There may be work to do now on the tops of plants even though the ground is frozen. This is usually the best time to prune grapes. Shrubs may have been misshapen by weight of snow or tree limbs may have been broken. This pruning may be done any time now that the weather is fair enough.

One of the most important spray operations of the season is the dormant spray which can be done anytime now that the weather stays above forty for a few hours, the wind is not too strong and the new leaves have not opened. Miscible oil is still an effective remedy for the scale insects on Elm, Ash, Maple, Spruce and some shrubs. Lime-sulphur as a dormant spray will kill many dormant overwintering insects and benefit the plants all through the season.

Inspect the bulbs and such which were stored last fall. Dahlias are especially particular as to drying out or becoming too warm. Glad bulbs should be treated for thrips if it has not been done before. It may be time to get the tuberous begonias started in flats. If you like the fun of seeing new plants start you should plant a few things in flats indoors and watch them sprout and grow. A few years ago we would all be getting the hot beds started. Electric cable now replaces Dobbin's droppings, but someone must now begin to plan for all the plants that will brighten our gardens in summer.

If it is true that there is more pleasure in anticipation than in realization, then February should be the gardeners' happiest month.



I Like a Man Who Likes a Tree

I like a man who likes a tree
And want no better company;
For such a man, I always find
Is just the very sort and kind
Who's not content unless it be
He, too, can grow much like a tree.

I like a man who plants a tree,
No further introduction he
Will ever need to win my heart;
To me he is the counterpart
Of usefulness, and comfort too,
And does the good few others do.

I like a man who likes a tree,
He's so much more of a man to me;
For when he sees its blessings there
In some ways too, he wants to share
Whatever gifts his own may be
In helping others, like a tree.

For trees, you know, are friends indeed:
They satisfy such human need;
In summer shade, in winter fire,
With flower and fruit meet all desire,
And if a friend to man you'd be,
You must befriend him like a tree.

Author Unknown.

March, 1950

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The Green Thumb

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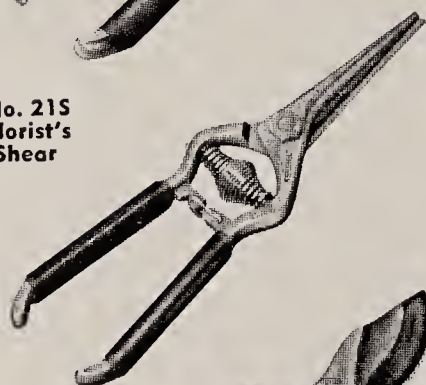
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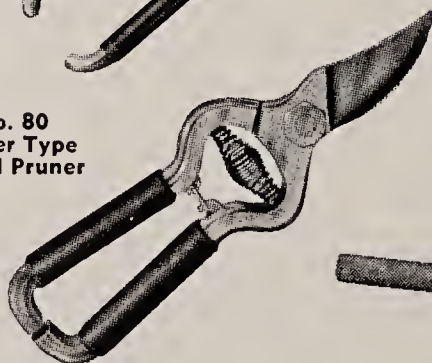
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The Green Thumb

Vol. 7

MARCH, 1950

No. 3

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MARCH IS THE TIME TO SEE YOUR NURSERYMAN

To make arrangements for your spring needs. He now has time to give you when he is not rushed as he will be next month. If you have plans to be made, a garden to do over or just a tree to plant, he can take more time now to do you a better service. Those who wait until the busy rush starts in April often times cannot get what they want as many items are still very scarce and the nurserymen are so busy in getting out their orders they have taken earlier, they just do not have the time to do you and them justice. Please do it now!

MARCH IS NOT THE TIME TO PLANT ROSES

You have all to lose and nothing to gain by planting roses in March. Don't be fooled by misleading advertising to plant roses during March. We often have subzero weather during March and that is very bad on newly-planted roses. Nearly every March we have cold, dry winds. That is also very bad on a newly-planted rose. April is the best time to plant them.

It is a very good idea to ORDER your roses in March for April delivery to insure your getting the varieties you want but for your own safety, do not plant before April.

Also, it is a good idea to know the origin of your roses. Pacific Coast grown plants are recognized as the best.

COLORADO NURSERYMEN'S ASSOCIATION

See the February Issue of the GREEN THUMB for List of Members

Colorado Forestry and Horticulture Association

Organized in 1884

"To preserve the natural beauty of Colorado; to protect the forests; to encourage proper maintenance and additional planting of trees, shrubs and gardens; to make available correct information regarding forestry, horticultural practices and plants best suited to the climate; and to coordinate the knowledge and experience of foresters, horticulturists and gardeners for their mutual benefit."

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MARCH SCHEDULE

Mar. 5. Sun. "Finding Spring" in Deer Creek. Leave Horticulture House 9 a.m. Mrs. Kathryn Kalmbach, Leader. Walking distance to suit the group.

Mar. 9, Thurs. 8 p.m. Horticulture House. Rose Society.

Mar. 12. Sun. Mt. Morrison Exploration trip. Leave Horticulture House 8:30 a.m. Walking 3 miles and 1000 feet elevation. There should be some flowers showing up as well as grand views.

Mar. 15. Wed. Report on Chicago Shade Tree conference.

Mar. 17. Fri. 7:45 p.m. Horticulture House. "More Than A Dam Site". Kodachromes and talk by Mr. and Mrs. Whitney A. Bradley. See further description of this event on page 29.

Mar. 19. Sun. Walk on Cub Creek Trail. Leave Horticulture House 8:30 a.m. Easy walk in interesting country.

Mar. 24. Fri. 7:45 p.m. Europe in 1948. Kodachromes and talk by Dr. and Mrs. Wm. H. Crisp. Horticulture House.

It's a trip Dr. and Mrs. Crisp will be taking us on, when they entertain us with their fascinating series of kodachrome pictures taken as they drove through almost all of

Europe two summers ago. We'll get quite a way from Denver and our lovely Colorado, for they'll take us from the golden ruins and sunny gardens of Italy, through the contrasts of Spain, Switzerland and France, with side trips to misty England and other countries, until we reach the somber forests and dancing waterfalls of the northern countries.

For all who have visited Europe, this will be a trip among friendly and familiar places, and those of us who are still looking forward to such a jaunt will find that we'll have many new names to add to our list headed—"That's a place I've just got to see."

Mar. 26. Sun. Windy Saddle to Beaverbrook Trail. Leave Horticulture House 8 a.m. Walking distance 5 to 10 miles on good trail. Beautiful country.

Apr. 2. Sun. Roxborough Park or vicinity. Leave Horticulture House 8:30 a.m. Easy wanderings among the rocks to see the early birds, trees and flowers.

Apr. 9. Sun. Breakfast hike to some good lookout in the foothills. Leave Horticulture House 7:30 a.m.

April 16. Sun. South Platte to Warton, 9 miles down old railroad track. Joint trip with Gates Rubber Co. Outing Group.

MARCH MAGIC

Arrangement on front cover by
MRS. EARL DAVIS

The branches and buds of the maple trees are especially beautiful this time of year. They are combined with the branches and cones of the Colorado Blue Spruce. All are held in place with a pin holder and placed on a green metal tray.

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TREES FOR DENVER

With Their Good and Bad Qualities

I—Indicates useful for planting in irrigated areas. M—Mountains. P—Plains. It—Irrigated area with some protection.

Line of ten dashes under each name indicate our comparative rating of each tree. For instance Yellow Buckeye rates 70% advantages to 30% disadvantages, and Sugar Maple 50-50.

MOST USEFUL LARGE TREES

Advantages

Disadvantages

Acer platanoides, NORWAY MAPLE—It

Beautiful at all seasons. Permanent.		Subject to sunscald when young. Slow growing.
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Acer platanoides, Cl. SCHWEDLER MAPLE—It

Red leaves in spring. Permanent. Good shape.		Subject to sunscald when young. Slow growing.
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Acer sacharinum, SOFT MAPLE—IMP

Nice clean tree. Medium rate of growth. Tolerant of Colorado climate.		Sensitive to alkaline soils. Subject to chlorosis. Shallow root.
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Acer saccharum, SUGAR MAPLE—It

Beautiful. Permanent. Fall color.		Subject to sunscald when young. Hard to start. Slow growing.
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Aesculus hippocastanum, COMMON HORSECHESTNUT—It

Very attractive bloom. Symmetrical shape.		Deep rooted and hard to transplant. Slow growing.
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Aesculus octandra, YELLOW BUCKEYE—It

Symmetrical shape. Large flower heads. No serious pests.		Slow growing. Hard to transplant. Deep roots. Not generally known.
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Catalpa speciosa, WESTERN CATALPA—IP

Beautiful and picturesque leaves, seed pods and flowers. No pests.		Young trees sometimes kill back and larger trees sunburn. Drops pods and withered flowers.
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Celtis occidentalis, COMMON HACKBERRY—IMP

Good shape. Drought resistant. No serious pests.		Hard to transplant. Nipple galls sometimes on leaves.
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Fraxinus pennsylvanica lanceolata, GREEN ASH—IMP

Hardy. Drought resistant. Few serious pests.		Slow growing. Irregular in form unless grown rapidly.
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Gleditsia triacanthus inermis, THORNLESS HONEYLOCUST—IMP

Hardy and drought resistant. Picturesque shape and pods.		Slow growing. Drops leaves and pods. Serious borer threat.
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Along the river. Photo by Bruce Korphage.

*Advantages**Disadvantages***Gymnocladus dioicus, KENTUCKY COFFEETREE—IP**

Nice shaped tree. Hardy and pest-free.		Slow growing. Hard to transplant.
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Juglans nigra, EASTERN BLACK WALNUT—IP

Bold, rugged tree. Edible nuts. Few pests.		Deep rooted, slow growing and hard to transplant.
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Populus acuminata, SMOOTHBARK POPLAR—IMP

Neat and clean. Rather upright in growth.		Rapid and rank growing.
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Populus sargenti, WESTERN BROADLEAF COTTONWOOD—IMP

Very hardy and pest free. Grows in difficult places.		Needs plenty of room and water to grow well.
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Quercus falcata, RED OAK—It

Long-lived, sturdy tree. Good fall color.		Slow growing and hard to transplant. Subject to chlorosis.
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Quercus macrocarpa, BUR OAK—IP

A bold sturdy tree. Tolerates our alkaline soil better.		No fall color. Slow-growing and difficult to transplant.
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Quercus robur, ENGLISH OAK—It

Good form and sturdy.		Slow growing and particular as to soil.
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Tilia americana, AMERICAN LINDEN—IP

Beautiful, symmetrical shape. Medium-fast growth.		Bark tender and subject to sunburn when young.
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Tilia europea, EUROPEAN LINDEN—It

Usually more symmetrical and dense than American.		A little more difficult to establish.
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LESS USEFUL LARGE TREES**Acer negundo, BOXELDER—MP**

Will grow where nothing else will. Attractive when young.		With age becomes ragged and full of galls. Harbors bugs.
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Acer pseudoplatanus, PLANETREE MAPLE—It

Beautiful shape and leaves.		Difficult to establish.
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Acer saccharinum, CUTLEAF WEEPING MAPLE—It

A light, graceful tree.		A little more difficult to grow than common soft maple.
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Betula papyrifera, PAPER BIRCH—It

Clean, white bark and graceful effect.		A little difficult to transplant. Subject to beetle and drought damage.
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Betula pendula, EUROPEAN WHITE BIRCH—It

White bark. Light effect.		Subject to beetle and drought damage.
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*Advantages**Disadvantages***Betula pendula, CL. CUTLEAF WEEPING BIRCH—I**

A most beautiful tree, with white bark and light effect.	Subject to beetle damage. Hard to transplant.
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Fraxinus americana, WHITE ASH—IP

Sturdy, hardy tree. Drouth resistant.	Slow growing and sometimes of irregular shape.
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Juglans cinerea, BUTTERNUT—It

Good tree when established.	Very difficult to grow.
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Larix sp., LARCH—It

Beautiful, light effect, especially in spring.	Hard to get established. (A deciduous conifer)
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Morus alba tatarica and rubra, RUSSIAN AND RED MULBERRY—ItP

Attractive foliage and fruit. Fruit edible by birds and man.	Often partly winterkills. Fruit may become a nuisance.
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Platanus occidentalis, SYCAMORE—ItP

Clean tree with interesting bark and fruit.	Subject to chlorosis and other diseases. Hard to grow.
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Populus alba, CL. BOLLEANA POPLAR—I

Narrow upright growth, clean appearance. Smooth green bark.	Rank feeder and shallow roots. Subject to several serious pests.
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Populus alba, SILVER POPLAR—MP

Quick growing, drouth resistant. Makes a large tree.	Rank feeder. Often sends up suckers in lawn.
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Populus andrewsi, ANDREWS POPLAR—M

Neater than common cottonwood.	Is still a poplar.
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Populus angustifolia, NARROWLEAF POPLAR—M

Chiefly valuable for high altitudes where other trees will not grow.	Has most of the faults of all poplars.
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Populus deltoides missouriensis, BALSAM POPLAR—M

Smaller size than cottonwood.	Chiefly for high altitude use.
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Populus canadensis eugenei, CAROLINA POPLAR—MP

Grows fast. Easy to propagate and transplant.	Soon becomes overgrown. Subject to storm and insect damage.
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Populus nigra, LOMBARDY POPLAR—IP

Attractive, narrow, upright shape. Very useful.	Rank feeder. Subject to attacks of canker and scale.
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Populus simoni, CHINESE POPLAR—I

Upright shape but broader than Bolleana or Lombardy.	Still has most faults common to poplars.
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*Advantages**Disadvantages***Prunus serotina, BLACK CHERRY—It**

Large, clean tree with attractive flowers and fruit.

Bark subject to sunscald. Difficult root system to transplant.

Quercus alba, WHITE OAK—It

Beautiful, sturdy tree.

Slow and difficult to grow in our soil.

Quercus coccinea, SCARLET OAK—It

Beautiful, especially in fall color.

Prefers a more acid soil than that usually found in Colorado.

Quercus palustris, PIN OAK—It

Beautiful shape and fall color.

Dislikes our alkaline soil. Hard to transplant.

Salix, WILLOWS—IMP

Some, especially the golden weeping, are beautiful trees when in the proper situation.

All rank feeders and must have water and lots of room. Short lived and easily broken. Clog sewers.

Ulmus, ELMS—P

Interesting habit of growth. Tolerates drought and alkali.

Subject to Dutch Elm disease and Scolytus beetle damage as well as the other pests of elms.

Ulmus pumila, SIBERIAN ELM—MP

Nice shape, quick growing and easy to plant. Grows well under dry conditions.

Short lived and easily broken in storms. Shallow roots.

USEFUL SMALL TREES**Acer campestre, HEDGE MAPLE—It**

Beautiful, small tree.

A little hard to transplant.

Aesculus glabra, OHIO BUCKEYE—It

Beautiful, symmetrical shape. Attractive flowers, fruit and leaves.

Deep rooted and hard to transplant. Slow growing.

Ailanthus altissima, TREE OF HEAVEN AILANTHUS—IP

Will grow under difficult city conditions of smoke and poor soil. Attractive foliage and fruit.

Suckers from the roots. Disagreeable odor. Weedy habit of growth.

Crataegus coloradensis, COLORADO HAWTHORN—IM

A small tree attractive in flower and fruit.

Slow growing. Difficult to transplant. Irregular shape.

Crataegus crusgalli, COCKSPUR HAWTHORN—I

Distinctive, low, round-headed shape. Fruit hangs on late.

Low headed and slow growing. Difficult to transplant.

*Advantages**Disadvantages***Crataegus mollis. DOWNY HAWTHORN—I**

Small tree of attractive shape. Good flow-
ers and fruit.

Slow growing and difficult to transplant.

Crataegus phaenopyrum, WASHINGTON HAWTHORN—I

Attractive shape. Bright red fruits hang
on late.

Slow growing and hard to transplant.

Elaeagnus angustifolia, RUSSIAN OLIVE—IMP

Picturesque, informal habit of growth.
Drought resistant and pest free. Narrow
silvery leaves.

Gets scraggly with age. Drops leaves, twigs
and fruit.

Koeleruteria paniculata, PANICLED GOLDENRAINTREE—It

Beautiful flowers and interesting persistent
fruit. Tolerates alkaline soil.

Slow growing and often kills part way
back.

Malus, sp. DOLGO CRABAPPLE—IMP

White flowers and bright red fruits, good
to eat or see. Blight resistant.

Slow growing and may be damaged by
boys gathering fruit.

Malus, sp. HOPA CRABAPPLE—IMP

Rose-red flowers. Fruit very small. Re-
sistant to blight.

Slow growing.

Malus purpurea, ELEY CRABAPPLE—IMP

Rose-red bloom.

Spreading habit of growth.

Malus ioensis, PRAIRIE CRABAPPLE—I

Light pink flowers and small green fruit.
Petals drop clean.

Flowers not as large or numerous as Bech-
tel's.

Malus ioensis, CL. BECHTEL CRABAPPLE—IP

Covered in spring with large, double pink
flowers. No fruit.

Petals hang on after fading. Subject to
fireblight.

Malus sp., REDSILVER CRABAPPLE—I

Rose-red flowers. Leaves green above and
silvery-red beneath.

Slow growing.

Prunus cerasus, SOUR CHERRIES—I

Of good shape, flower and fruit.

Subject to vandalism when on street.

Sorbus americana, MOUNTAINASH—I

Beautiful orange fruits.

Subject to sunscald and blight.

Sorbus aucuparia, EUROPEAN MOUNTAINASH—I

Erect habit of growth. Attractive orange
fruits in fall. Few serious pests.

Bark of lower trunk subject to sunscald
when young. Sometimes has fireblight.

Sorbus hybrida, OAKLEAF MOUNTAINASH—I

Attractive orange fruit. Oak-like leaf.

Not as hardy or attractive as the European.

*Advantages**Disadvantages***Syringa Japonica, JAPANESE TREE LILAC—It**

Clean, neat habit of growth. Attractive white flowers. Hardy and few pests.		Slow growing and must be trimmed in tree form.
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Tilia cordata, LITTLELEAF LINDEN—It

A clean looking tree with dense, symmetrical growth.		Subject to sunscald when young. Slow growing.
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LESS USEFUL SMALL TREES**Alnus glutinosa, EUROPEAN ALDER—It**

Beautiful and interesting tree.		Very few have survived in Colorado.
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Carpinus betulus, EUROPEAN HORNBEAM—It

Slow growing, clean tree.		Difficult to start. Needs well drained soil.
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Carya sp. HICKORY—It

Very interesting and sturdy.		Difficult to start here.
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Catalpa bignonioides, UMBRELLA CATALPA—It

Small, formal shape.		Often winterkills here.
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Catalpa ovata, CHINESE CATALPA—I

Smaller scale tree and fruit than Western Catalpa.		Slow growing and subject to some winterkill. Unknown by many.
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Cercis canadensis, EASTERN REDBUD—It

Very early pink flowers.		Partly winter-tender.
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Cladrastus lutea, AMERICAN YELLOWWOOD—It

Smooth bark. Interesting flowers and fruit.		Requires some protection to become established.
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Crataegus oxycantha and monogyna, ENGLISH HAWTHORNS—It

Beautiful cut-leaves, white flowers and red fruits.		Subject to fireblight. Hard to transplant.
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Crataegus oxycantha, Cl. PAUL'S SCARLET THORN—It

Beautiful double red flowers.		More tender than the English.
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Crataegus punctata, DOTTED HAWTHORN—I

Good flowers and fruit.		Hard to transplant. Slow.
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Fagus sylvatica, EUROPEAN BEECH—It

Makes a beautiful large tree where it will grow.		Usually does not survive in our soil and climate.
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Ginkgo biloba, GINKGO (Maidenhair Tree)—It

Unusual fan-shaped leaves. Large size if it grows. An ancient tree.		Difficult to get to grow here when small.
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*Advantages**Disadvantages***Juglans rupestris, TEXAS BLACK WALNUT—I**

More hardy and rapid growing than Eastern Black Walnut.

Very small nuts. Deep-rooted and hard to transplant. Generally unknown.

Liriodendron tulipifera, TULIPTREE—It

Tall clean tree with tulip-like flowers. Distinctive leaves.

Difficult to grow except in good soil and must have protection.

Malus, CRABAPPLE—It

(Including Arnold, Carmine, Parkman, Tea, Aldenham, Scheidecker and other similar species and varieties.)

Beautiful flowers and interesting fruits.

Winterkill and blight.

Malus baccata, SIBERIAN CRABAPPLE—It

White flowers and attractive edible fruit. Fast growing.

Very subject to fireblight.

Malus floribunda, JAPANESE FLOWERING CRABAPPLE—It

Very beautiful pink flowers.

Subject to fireblight damage.

Malus pumila, CL. NIEDZWETZKYANA CRABAPPLE (Redvein)—I

Attractive rose-red bloom. Usually hardy and vigorous.

Loose, irregular shape.

Morus alba, CL. WEEPING MULBERRY—It

Interesting "upside-down" tree.

Frequently winterkills back.

Populus tremuloides, QUAKING ASPEN—ItM

Beautiful white bark and interesting leaves.

Hard to transplant. Very subject to damage by scale.

Prunus sibirica, SIBERIAN APRICOT—It

Attractive foliage, flowers and sometimes fruit.

Blooms so early that fruit is often killed.

Robinia neomexicana, NEW MEXICAN LOCUST—IM

Attractive pink flowers. Quite hardy and easy to grow.

Soon damaged by locust borers.

Salix pentandra, LAUREL WILLOW—IM

Attractive glossy leaves.

All the faults of willows.

Sophora japonica, JAPANESE PAGODA TREE—It

Attractive foliage and flowers.

Only a few have grown here.

Xanthoceras sorbifolium, CHINESE CHESTNUT YELLOWHORN—It

Attractive flowers and interesting fruit. Hardy.

Loose sumac-like growth. Difficult to propagate.

USUALLY SHRUB-LIKE**Acer ginnala, AMUR MAPLE—IP**

Finest fall color. Small tree. Slow growing.

Soon becomes open and scraggly in form.

*Advantages**Disadvantages***Acer glabrum and tataricum, R. M. AND TARTARIAN MAPLES—IM**

Neat appearance. Dwarf. Yellow fall color.		Normally tall shrubs. Particular as to soil. Slow.
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Alnus tenuifolia, MOUNTAIN ALDER—IM

Hardy. Beautiful early bloom. May be trained as a tree.		Usually of shrub form.
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Aralia spinosa, HERCULES CLUB—It

Very large doubly compound leaves. Large prickly stems.		Only partly hardy. Seldom gets large. Suckers from ground.
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Betula fontinalis, WATER BIRCH—IM

Clean, cherry-like bark. Slim twigs. Dwarf.		Does not have white bark.
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Caragana arborescens, SIBERIAN PEASHRUB—IMP

Fine foliage and small yellow flowers. Very drought resistant.		Gets coarse with age.
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Crataegus saligna, WILLOW HAWTHORN—IM

Nice flowers and fruit.		Irregular shape. Hard to move.
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Euonymus europaeus, EUROPEAN EUONYMUS—I

Attractive "bittersweet" berries. Good fall color.		May be trained as a tree.
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Prunus americana, Cl. NEWPORT PLUM—IP

Red leaves all summer. Fair flowers and fruit.		Normally a tall shrub.
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Prunus padus, MAYDAY TREE—ItP

Attractive flower and fruit, like native chokecherry, but does not sucker.		A little difficult to establish.
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Prunus pennsylvanica, PIN CHERRY—IM

Good white flowers and red fruit. Attractive to birds.		Normally shrub-like. Suckers from ground.
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Rhamnus cathartica, COMMON BUCKTHORN—IP

Very hardy. Black fruit.		Thorny. Slow growing.
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Rhus typhina, STAGHORN SUMAC—IP

Good fall color. Easily trained as a small tree.		Shallow rooted. Suckers. Short lived.
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Salix discolor, PUSSY WILLOW—IP

Early "pussies." May be trained as small tree.		Frequently killed away back by blight.
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Syringa villosa, LATE LILAC—IP

Good bloom. As it does not sucker it may be trained as small tree.		Slow growth. Subject to attack by borers.
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PLANTING AND CARE OF BUFFALO GRASS LAWNS

GEORGE M. FISHER

Consulting Forester, Salina, Kansas

BUFFALO grass is a highly desirable grass for lawns in the heavier soils of the Eastern Great Plains region of Colorado, where the lawns are in a sunny location and not watered too heavily. It forms a firm sod and requires relatively little care.

Improved strains of Buffalo grass and advanced methods of harvesting and processing have recently been developed. The outcome has been that the making of lawns by seeding with treated seed has largely replaced the sodding with vegetative material. A good Buffalo grass lawn can now be established in shorter time and at much less expense by planting new, treated seed.

Buffalo grass does not like the shade and should not be planted on shaded sites or under old, established trees. Also, any competition with weeds that tends to shade the grass should be removed by mowing. With new landscaping operations, tree shade is not too much of a factor, as it takes a good many years' growth of a young tree to create sufficient shade to effect Buffalo grass.

Buffalo grass should be planted on a firm seed bed, free from weeds and with the soil well prepared. One-half inch is the optimum depth for planting this seed, and if planted any deeper, failure is almost sure to result. Where the area is sufficiently large to permit machine operations, drilling with an ordinary wheat drill is the quickest method of planting. For home lawns, however, this is not ordinarily feasible, and they must be seeded by broadcasting or by sowing in rows.

Sowing by rows is the fastest method of obtaining complete turf

closure, usually in one season, and provides the best weed control. Spacing of 6 to 12 inches between rows is used in the row method, and obviously, the closer the rows, the sooner the grass will make a complete cover. In row seeding the seed should be spaced about one-half inch apart in the rows, and the rows covered with one-half inch of soil.

By any method used, the amount of seed required for lawn building should run between 1 and 2 pounds per 1,000 square feet of area seeded. Broadcasting will require the heaviest seeding rate, and closer spacing of the rows by the row method will likewise increase the amounts of seed needed.

The planting season for Buffalo grass extends from April 15 to June 15. With lawns where water is available to insure good germination, the seeding period may be extended to as late as July 15. The optimum time for seeding well-prepared lawn areas with watering facilities, is between May 15 to June 15, which will provide for cultivation sufficiently far ahead to take off one or two crops of weeds before planting the grass.

Lawn plantings will spread much faster if weeds are controlled. Broadcast plantings will need to be clipped lightly three or four times during the first growing season to reduce shading from excessive weed growth and to eliminate competition for moisture. In row plantings, where it is possible to control weeds by hand weeding, it is best not to clip the grass during the establishment season.

As new plantings require some watering the first year if complete closure of the turf is to be had, there will, of course, be more weeds than where the

seed bed is left unwatered. Excessive watering will usually be found detrimental, except where needed in the establishment stage, as it tends to encourage the growth of weeds.

Buffalo grass lawns are ready for use whenever the grass has formed a good turf, and they will withstand fairly heavy usage. While Buffalo grass requires considerably less mowing than bluegrass, it should be clipped occasionally to produce an even, smooth-appearing turf and to discourage competition from weeds. After the first year, Buffalo grass lawns may be clipped to a height of 1½ to 2 inches. Lawns which receive some watering will require somewhat closer and more frequent mowing.

WHAT ARE YOUR TREES WORTH?

*From National Arborist Association,
Wooster, Ohio*

The twenty-inch shade tree on your lawn may be worth \$1,000 or more. If it should die and you were to remove it and plant another of similar size, the cost would be much more than \$1,000.

Shade trees contribute many things to man's welfare and happiness which make them valuable. First of all, they provide shade from the intense heat of the sun. They shade our homes and lawns. They shade our streets, sidewalks, picnic areas and playgrounds. Trees reduce the glare from streets, sidewalks and buildings. They muffle noise and act as windbreaks. These are only a few of the physical comforts trees provide.

Trees also add to man's mental health and well-being. There is a kind of peace and restfulness to be found where men and trees live together. Shade trees are an inspiration for people to do better work and live better lives. They are morale builders.

Slum areas do not exist where there are fine shade trees.

All too often we think nothing of the value of our friendly trees until a catastrophe, such as wind, lightning, insects or disease strikes them. Then we suddenly realize that shade trees are valuable assets to our community. They are deserving of the best care we can give them in order that we may enjoy them to the fullest and preserve them for future generations.

What Is Alpinism?

"Is alpinism then synonymous with the life in the open? To make camp among wild cliffs or at the edge of a lonely tarn, to crouch with a few companions round a fire and gaze at the undulating flame, while in the distance the torrent rolls with muffled roar, all this casts its peculiar magic spell. Undeniably part of the pleasure of alpinism consists of liberty, adventure, and primitive living, all that stirs man's deepest instincts. This explains the superiority of a climb from camp over one which starts from a comfortable hut, and the advantage of the latter over one that starts from a hotel. A smooth rock face is better than a trail, and a trail better than a carriage road". From, "Notes on the Psychology of Mountaineering" by J. Federico Fino, in APPALACHIA for Dec. '49.

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OUR LITTERED HIGHWAYS

Excerpts from a letter by EDNA WOLFE in "The Garden Path"

THIS summer it was my privilege to travel through the western part of the United States. Good automobiles and fine broad, smooth highways make travel safe, comfortable and an inspiring experience. We saw cars from every state, as well as Canada, Hawaii and Mexico. It is estimated that 25,000,000 persons register thru the National Parks annually.

But marring this beautiful scenery and the expensive highways is litter, debris of all kinds discarded by touring motorists — cans, bottles, old tires, clothing, paper and wrappings—and Kleenex-Kleenex-Kleenex! a veritable rash of facial tissue which clings to the grass and weeds along the highways.

Many times we saw lunch boxes of partially eaten food, together with wrappings, hurled out of passing cars. In the states where there is little rainfall, the highways were more littered as there it requires longer for the discarded materials to disintegrate in the

dry areas. Moreover, no highway maintenance crews could possibly keep up with the constant deposit of litter day after day.

At numerous roadside parks there was garbage, paper, bottles on the ground sufficient to make the place an undesirable one in which to eat lunch and rest.

How thoughtless of tourists to leave a trail of litter behind them! Travelers are guests of the states where they go to enjoy beautiful scenery. It is neither fair nor well mannered to deface the beauty of nature in such fashion, and to spoil the outlook for others who follow.

Then we returned to Ohio—and found more littered highways!!!

I began to wonder—could not we garden club members do something about this menace?

* * * Sure, everyone can help to correct this situation by teaching, preaching and example!—Ed.

Prizes For Writers And Photographers

The publications committee has decided to offer several prizes for suitable material to use in coming Green Thumbs. Individuals, clubs or organizations may compete. There will be two classes; Denver and vicinity (10 miles), and anywhere in Colorado or the Rocky Mountain area outside of Denver. Two first prizes of \$50.00 each will be awarded and two second prizes of \$15.00.

Material submitted should be sufficient to fill approximately half an ordinary issue of the Green Thumb, and will be judged for its quality, quantity and appropriateness. All entries

must be in by May 1, 1950; material submitted must be in by Dec. 1, 1950 and awards will be made during December 1950. At least five must submit material in each class to compete.

The purpose of this contest is to obtain good garden stories and pictures from all over the state and region, so that the influence of the Association might have a wider effect. All those desiring to compete may get copies of more detailed rules and suggestions for suitable material from the editor. Don't worry about not being able to write; if you have anything worth telling others about in your community, just get some good pictures of it, tell us all the facts about it, and we may be able to make a good story of it. Enter now.



EFFECTIVE USE OF EVERGREENS

The picture above shows part of the garden of Mr. and Mrs. George S. Adams at 3301 Jay St. Photo by Edgar E. Warren.

Where Does Your \$2.00 Go?

Inspired by the cards in the street cars we asked our treasurer, Dick Osborne, to show us how our \$2.00 membership was used. Here is his report:

Printing, mailing, postage on the Green Thumb (Receipts for advertising deducted)	\$1.94
Maintenance of Horticulture House, Water, light, phone etc.	1.19
Clerical help at Horticultural House	1.16
Total	\$3.29

This does not include salaries for editor and horticulturist, which do not come out of the membership fund, but is supplied by other friends of the association; nor does it include money spent for books or library help, which is in another separate fund supplied by gifts. If these were added it would make the amount spent for each member very close to \$5.00.

How do we do it? Only by gifts and higher class memberships.

It is very obvious that we should raise the minimum membership to at least \$3.00 next year and encourage more people to take out the \$5.00 memberships which are the truly "Sustaining" memberships.



Mahonia aquifolium, Oregon Hollygrape

LISTEN TO THE NEW GARDEN PROGRAM

Beginning Saturday Morning, March 4th. Weekly at 9 to 9:30 there

EVERGREEN GROUND COVERS

KATHLEEN MARRIAGE

IN selecting and growing Ground Covers for Colorado and nearby States we must turn our backs on most of the general information and recommendations offered on the subject for climatic reasons.

English Ivy, Pachysandra and their peers look either sick or sorry or both in our brilliant winter sunshine; so do most of the Euonymus creepers. All of them may be grown in permanent shade where altitude is suitable and a winter snow blanket may be expected.

Our centers of population in Colorado where the greatest number of people are making gardens and need suitable ornamental plants are from 5000 to 7000 feet elevation and are on the eastern slope where snow is intermittent and winter sunshine strong and bright. There are as many climates as there are sides to the house. North exposures ask for plants with just the opposite requirements of those in South exposures. Now we're getting to the point at last. There are two evergreen ground covers, both hardy as Pike's Peak, both well-behaved enough for the best associates and surprisingly both will be happy in either sunshine or shade.

The first is *Berberis* (*Mahonia*) *repens*, Colorado Holly, a native, found wild from 6,000 to 10,000 feet altitude, in widely varying conditions, on sunny dry gravel banks and in deep leaf-mold on shady north slopes. It resembles somewhat *Mahonia aquifolium*, Oregon Hollygrape, but its leaves are not usually glossy nor does it grow to more than about one foot in height, but the hidden part is its secret. In good soil its roots travel underground and send up new tops at intervals until it makes literally a ground cover. Incidentally its yellow flowers in early spring are welcome, if a bit puddin'-y looking, and its blue berries are most decorative if the birds don't get them first.

The second of our pair is the well known *Vinca Minor*. (How ever did it get the name Myrtle slapped on to it? There is little resemblance between the two.) This also grows well in either sun or shade. Its finer texture and lower stature make it suitable for smaller areas than is *Berberis repens*. Young plants are better looking than old (aren't we all?). One way to keep it looking fresh and young is to clip all the tops off at ground level in spring and give it a dressing of peatmoss-manure mixture.

The degree of success with both of these depends on how well we prepare the ground for them. Both do better on well drained soil—gravel or chiprock below their roots. They respond heartily to a soil in which a generous amount of compost, or of peatmoss and rotted manure, is mixed.

TRANSPLANTING TRICKS

The extracts below are from talks given at the Rocky Mountain Horticultural Conference, February 7, 1950

BARE-ROOT EVERGREENS

R. U. WILLIAMS

For successful transplanting of evergreens it is important that healthy vigorous stock be used. Such stock should have been grown on suitable soil, should have had sufficient and regular irrigation, and should have been kept free from insects and diseases. It is also essential that the plant have a compact root system. This is induced by transplanting within the nursery at intervals of three or four years. A move should not be attempted until after two seasons of growth after transplanting.



In my opinion, no method of transplanting can assure success without the above favorable factors. And with such factors, any method can be successful, even bare root handling.

On the theory that an evergreen root would live and function if kept moist even though disturbed, we attempted bare root planting on a small scale five years ago by transplanting five Scotch Pine six to ten feet in height within the nursery area. All five lived and have grown well since.

We were encouraged to attempt bare root planting away from the nursery. During the past three seasons we have used this method in transplanting all larger grades. The losses have been about one third less than B&B. The advantage to both customer and nurseryman is considerable. Less help is required in the nursery and much time is saved in preparing the plant for moving. In the planting, labor is saved and no heavy transplanting equipment is needed.

In digging, the attempt is made to get all roots within a reasonable limit of space.

Unlike deciduous plants, rootlets do not form at the cut ends of the larger roots of evergreens. Thus, we are dependent on preserving the network of small rootlets. The roots are exposed to the air during a minimum of time by using a crew of three to six men in the digging of one plant. As the roots are exposed they are sprayed with water. Two or three panels of burlap are left soaking in a barrel of water nearby to be used for wrapping the roots and the entire top of the tree. The tree may be then carried for a considerable time.

In planting, the hole should have been made ready by the time the stock arrives. As soon as the roots are spread out they are sprayed and as the soil is slowly added, water floods the hole.

We used dowax last season with no noticeable difference in results other than that those trees that did not take hold retained a green color into the summer.

The after care of plantings is a very important consideration to insure success. The new owner should be cautioned against excessive use of water as well as its neglect.

The evergreen should be guyed as soon as planted as it will be unable to hold its position against spring winds. Attach wires to a ring of rubber hosing placed about the stem of the tree.

We have not lost a Spruce by using this method of transplanting.

Although we were able to plant the Scotch Pines successfully within the nursery, we have not had success in planting pines since. We have had fewer losses in moving upright growing Junipers. The losses sustained, we believe, were due to attempting the transplanting of trees that had stood too long without transplanting, planting in extremely poor soil, or from faulty after care; more likely overwatering. We have successfully moved a number of Pfitzers measuring six feet in diameter.

A much greater experience than ours alone is needed before a fast set of rules can be laid down. I hope that each of you will attempt this method. Then, through pooling our observations, we may be able to establish working methods for good success in this much easier and cheaper method of handling evergreens.

OAKS

By ARTHUR BRAUN

I will, as best I can, explain the method I use in transplanting Oaks. I think that this method is practical because it is much cheaper than balling and burlapping and certainly

much cheaper than shipping in B&B oaks from nurseries that are several hundred miles distant. I also feel that this method is successful because I averaged about 85 % to 90 % "take". In 1947, I planted 40 Red Oak and all lived the first season and to the best of my knowledge, are still alive and growing.

It goes without saying that the first step should be a hole that is large enough to accommodate all the roots—in fact the edge of the hole should clear the farthest spread of the roots by about 4 to 6 inches.



On the bottom of the hole, spread a three inch layer of Canadian or European peat moss. Place the tree in proper position on this layer of peat; then completely cover all of the roots with pure peat. Now fill the remainder of the hole with top soil. After the hole has been filled level, water by inserting hose from faucet as deeply into the peat as possible and permitting water to run at a moderate force until the peat and soil have settled.

It seems that the success of this way of transplanting lies in keeping the roots encased in pure peat moss without mixing any soil with it whatsoever. The peat moss stimulates the formation of new fibrous feeding roots quickly and this point after all, is the important goal in transplanting difficult subjects like Oak. A final but important suggestion is that the peat moss should never be allowed to become dry at any time during the first growing season and water should be applied thoroughly and deeply not less than once a week—oftener when the weather is exceptionally dry and hot.

HACKBERRY

GEORGE F. KROH

The hackberry reminds one somewhat of the Missouri mule. Both are sure-footed, hardy, and display a lot of stamina when on the move, but sometimes when you undertake to transplant either one into a new situation, both a mule and a hackberry have been known to balk. I do not say that they all do, but some reactors can give you a bad time unless you have learned to be patient.



Frankly I must confess that I do not know any \$64 tricks as to how to make a transplanted hackberry start off readily if it is not so inclined. However I feel that with a little more understanding, and with a little more co-operation between the nursery and the customer that a lot of difficulty can be avoided.

It is obvious to me that a hackberry tree's first concern is to get its root system in order; top growth comes second. And that root system is vigorous to such an extent that the

feeder roots travel further from the tree than we realize. Consequently, unless a hackberry has been root pruned or transplanted within a certain time, rather naked but sturdy roots without many small feeders will be encountered within the usual or normal range for digging a tree.

In nursery practice we have had fair success if the trees are root pruned about every third year. During the first three years a nice presentable tree can be grown to 6-8 or 8-10 foot range. This is the most economical size to grow, and the most economical size range for the planter to buy. Assuming that the trees are root pruned at this stage to grow on to larger size, the ensuing year's top growth is checked, but a new set of feeder roots develops in the area near the tree. During the second and third year of this second phase, these new roots develop rapidly and if not again root pruned before the tree reaches a 2½ inch caliper, this second set of roots can also have become coarse enough to make the tree sluggish when transplanted.

In the case of moving larger specimens, it would seem very desirable to trench around the tree a year or so in advance, at a radius in which it is practical to move the tree. Here again the object is to sever the majority of the coarse roots so that feeder roots will be simulated to support the tree the first season after transplanting.

It is thought by some that fall planting may have at least equal virtue with early spring planting.

Retarding of moisture loss from the branches by means of spiral wrapping the trunk and main branches, or coating the bark with Dowax or plastic formula will possibly show benefit by actual comparison. Judicious pruning is a long recognized ritual in connection with transplanting, also to mini-

mize moisture requirements from the roots while the tree is starting.

Occasionally one will witness "suspended animation" in a hackberry, without a leaf in sight for weeks, but the cambium bark on the trunk and limbs staying green and moist. If the bark remains in good shape do not give up, because such trees have been known to break into foliage when good and ready, sometimes as late as the following spring. It is a temptation to water-log the soil to make the tree start. I do not feel this is a good practice. Instead, treat the tree just as though it were growing. That way you, instead of the hackberry, may win the war of nerves.

I would suggest that the homeowner will have a better break with younger lighter caliper trees than with trees of heavier caliper. If $2\frac{1}{2}$ to 4 inch trees must be considered, and the nursery has them two or three times root pruned, please bear with him because he has quite a bit more invested in his product than if he just planted a small whip and did nothing more to it.

HAWTHORNS

WM. H. LUCKING

I do not know of any "tricks" in transplanting Hawthorns, but I believe that if you would use all the precautions suggested by these other men for transplanting oak, birch or hackberry that they could usually be moved with safety.

If handled in small sizes they can be transplanted readily, but they have a difficult root system with few fiber roots which makes them hard to move in large sizes. For transplanting bare root I have tried root-pruning them in the nursery, but their recovery from this operation was very slow, so I have taken to balling and burlapping them. This has taken a lot of extra work,

but if the soil is at all heavy, it will take almost as much work to dig bare-root, when sufficient root system is preserved.

Nurserymen have found that they could not get a fair price for the bare root plants, but the balled specimens looked as though they had greater value, and so would bring prices sufficient to cover the extra cost of handling.

The hawthorns are, of course, subject to the damaging cedar-hawthorn rust, but we should not condemn them



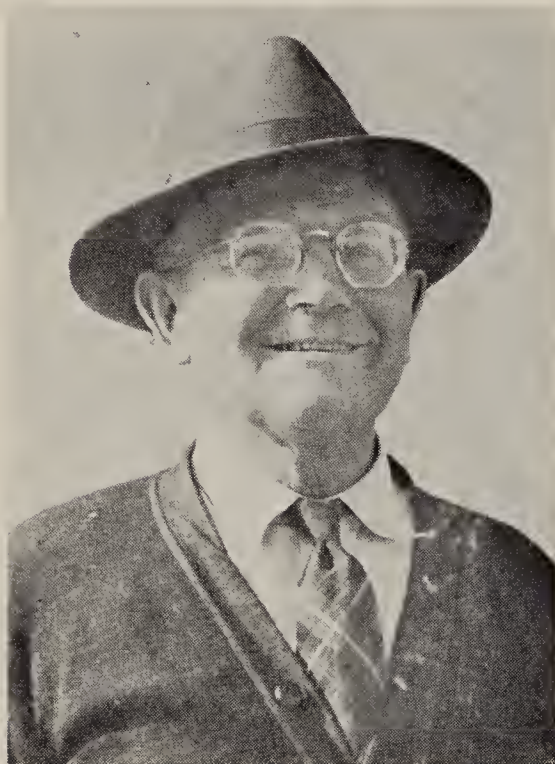
entirely for this, for it can be largely controlled by the proper treatment. They include many species and are one of our finest group of ornamental plants.

Some good nurserymen claim that hawthorns will "break" new roots and leaves if the tops are frequently sprinkled with water after they are transplanted. Without doubt the system used by Mr. Braun for oaks or Mr. Williams for evergreens would also help in successfully transplanting hawthorn—Editor.

NATIVE ASPEN

HENRY GESTEFIELD

I was able to study aspen reproduction while for seventeen years I was owner of a nursery and landscape service at the highest altitude of any commercial nursery in America. I have transplanted and shipped many aspen with excellent results. Many others have tried but very few have succeeded. Why?



First of all we must realize that their natural reproduction is different from other trees—that their root structure is different, with a habit of suckering from shallow-rooted mother leads or underground runners. This sucker-producing runner can be traced from tree to tree hundreds of feet, new tree sprouts coming up all along.

To successfully transplant trees 10-12 feet high and 2-3 inches in diameter, one must first pre-cut all roots leading to and from the tree with a sharp spade, then dig a trench around about a foot deep, leaving two foot root stumps exposed for as short a

time as possible. Tip or tilt tree enough to enable you to make incisions on under side of stub root, then make a smooth undercut outward for future root development. Straighten tree again, pack good dirt or sand around it, water thoroughly, put six inches of mulch on top and tie tree with figure 8 ties to surrounding trees. All this should be done when leaves are turning golden in autumn. Move tree next spring, or any other spring, without ball of dirt, but be sure to keep roots wet until planted. Don't cut back until several years later, if you must. Bring some mountain soil and leafmold along for use in planting said aspen by your bedroom window. (I had one in Alamosa by my window).

A good nurseryman can dig a thousand or two, 4-8 foot high, as lining out stock, but must keep them from being bruised and must keep the roots wet until they can be heeled in in a V trench. The roots should be covered with alkali-free sand, 3-4 inches deep, with the trees leaning to the south. Just before trenching or heeling in all roots must be freshly outward undercut and sharp incisions made on underside with sharp ice-pick or knife, as it is there that the new roots will form. Soil covering roots must be kept wet, also tops should be sprinkled before freeze-up.

When buds begin to burst in early spring, set young aspen in nursery row, 3 feet apart, plant not too deep and water frequently. Next year you may send trees anywhere with safety.

This procedure of transplanting mountain-grown trees and shrubs will apply to Scrub Oak, Mountain Maple, Birch, Alder and many other native woody plants. Try it. It's fun.

My ambition is that when I grow old (I'm only 63 now) I can start an aspen nursery west of Denver somewhere. Will I have fun??

ROSES IN POTS

FRANK RICHARD

Nurserymen who still cling to the old fashioned bare root method of handling roses are all-too-familiar with the disappointments, losses, complaints attending this business in Colorado—factors that led us four years ago to discontinue the bare root rose business entirely. The decision was, I might add, literally forced on us by customers who for six years previously had been offered a choice of bare root plants or planted and started plants; by 1945 ninety-five percent of them were demanding the started



plants, would have nothing to do with bare root plants.

The advantages of planted roses are so numerous, and so obvious, both to the nurseryman and to the amateur. First and foremost this

modern method of handling roses enables both nurseryman and customer to be independent of Colorado's Spring weather, undoubtedly the world's worst.

Properly done, *it gets the roses started on time*, a factor of prime importance. After nearly two decades growing and handling roses we have acquired a few empirical opinions concerning them, one of which is that *they must be in the ground before April 15*. How often is this possible in Colorado with old fashioned bare root handling? There are exceptions to this rule of course, as with any of the rules of gardening. Lots of bare roses are still sold from all kinds of storages even into June but after April 15, no matter how good the rose and how good the storage, a rose out of

soil and growing conditions loses vitality very rapidly.

The mere fact that a rose is standing in a Cloverset pot does not guarantee the thrilling performance that a good rose properly handled will always give. "Leftovers" potted up in late May will never amount to anything. The best roses are planted before April 15.

Empirical opinion No. 2: You must have roots before you have tops. To get roots before tops your roses must have from six to seven weeks of ample soil moisture (but never so much as to make it soggy), low soil temperature, low to medium air temperature and *high humidity*. Let me repeat that, *high humidity* for a strong start. Soil temperature is usually favorable in April but air temperature fluctuates too wildly for bare root roses planted in the open to do their best. Even in our "wettest months" (March and April) "kiln-dried" best describes our air the greater part of the time; warm dry winds puts a terrible burden on the rose's will to grow. Some gardeners "hill up" newly planted roses outdoors but this does only part of a job.

By planting our roses in pots, under cover, we are able to complete the planting on time; then we have gone to considerable expense to provide proper growing conditions. We dug deep frames, excavating $4\frac{1}{2}$ feet, with concrete walls extending 12 inches aboveground, earth floor and tight-fitting wood covers. The planted roses go into these pits, pot to pot, each watered twice to insure soaking to the bottom of the pots, the covers go on and we let Nature take its course. And what a course! In there, safe from blizzard, hail, and howling, hot "chinooks" seven weeks finds the roses fairly bursting with fat new growth, pots filled with a vigorous and hungry root system and the plants are

ready to come out and take the toughest that Colorado climate has to offer.

We like to keep them at least a week after they are brought out to the open, get them fed, adjusted to outdoor conditions and then they really "go to town" for anyone, expert rosarian or veriest novice. The late Ernest Haysler used to say that "anyone who can bury a cat can plant these roses".

I will add that it really is almost as simple as that but this brings up empirical opinion No. 3, and this is addressed especially to you amateurs: The "bud" (graft, or "knuckle") must be just under the surface in your garden. This is emphatically true whether you plant bare root or out of pots. Sure, some will grow, after a fashion, a year or so, with the plant half buried or with the bud four inches aboveground. It seems to us one of the most wonderful things about roses is the amount of abuse it takes to kill them. If you want maximum production and longest life from your roses get that bud *just under*, definitely under, but not more than 1 in.

Final empirical opinion concerns rootstocks. We have tried them all, not once but repeatedly; watched many, many other trials and find that there are only two rootstocks for Colorado: "Ragged Robin" and "Shafter". All you professional growers know these, most of you handle only roses on these stocks, and there isn't time for details of various rootstock characteristics here. It is enough to say that all others, while good in certain other parts of this great country, are utterly worthless in Colorado.

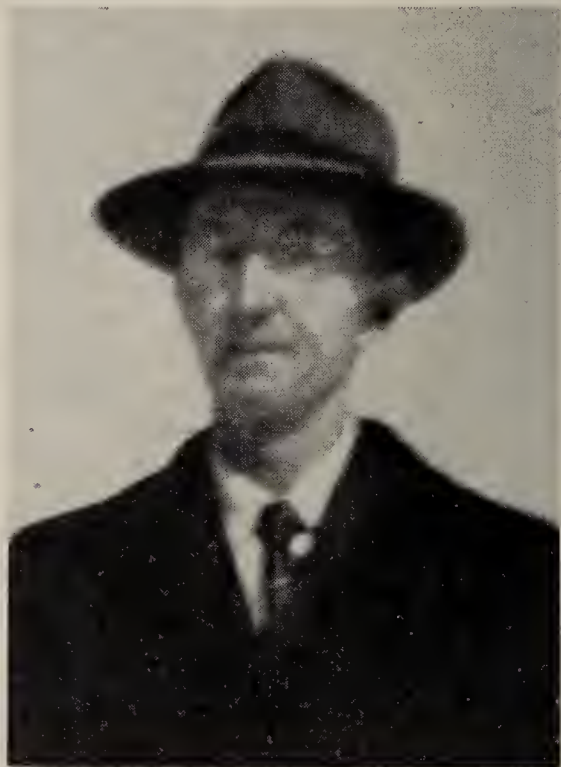
This is just one more compelling reason for you to shut your eyes, and your purse, to the "special guaranteed by mail bargains", no matter how beautiful the pretty pictures, and to buy from your nearby reputable plantsman.

BIRCH

GEORGE AMIDON

Recently in a farm publication, I ran across John Barrymore's directions for fighting a woman. He says, "The right way to do it is with your hat, just grab it and run."

The directions for planting a birch are not quite as simple but if they are followed can make the job just as successful.



I have found that the most favorable time to transplant a Birch is in the spring, between the time the buds start to swell and the leaves have reached one third of their ultimate size. This seems to be the time of year when all the forces of nature work together to produce rapid new growth. Showers of rain and snow combine forces with longer hours of sunshine to remove the last trace of frost from the ground. New roots start forth in a quest for food to send up to the expanding buds. This then is the time of year most advantageous

for the successful transplanting of a Birch.

Nurserymen and arborists have long been convinced of the desirability of root pruning. Large roots are covered by a waterproof coating of bark and consequently, without the aid of the small feeder roots, are unable to provide nourishment for the needs of the newly transplanted tree. Proper root pruning when the tree is small and followed at frequent intervals thereafter, will produce small feeder roots near the base of the tree so that when it is dug, balled and burlapped, ready to be transplanted to its permanent home, the ball of earth will contain a "Pickup and delivery service" of feeder roots that will tide the tree over until it has had time to develop new roots.

Any Birch one inch or more in caliper should be dug B&B. Around the ball the refill should contain a mixture of,

$\frac{1}{2}$ sandy loam

$\frac{1}{4}$ well rotted manure

A lb. or so of bonemeal

And $\frac{1}{4}$ Peat Moss.

Peat Moss is very important because of its ability to absorb and retain moisture. Bacterial action on manure helps supply soluble plant food.

Slow acting bonemeal continues the feeding process after quicker acting fertilizers have been exhausted.

Sandy loam is conducive to rapid root development. It absorbs water readily and does not retain it long enough to prevent proper aeration.

In all varieties of trees every twig and branch has openings called lenticels. These are loosely arranged cells that allow the air to reach the cambium and with the leaves comprise the tree's breathing system. They are extra prominent in Birches which may be one reason they are so hard to transplant. Wrapping the trunk of a

newly transplanted Birch with burlap prevents rapid dehydration and is an added precaution well worth considering.

These extra precautions take time and material and consequently are somewhat costly. I believe the end justifies the means, however.

In informal discussions some experienced nurserymen maintained that they could move birch as safely bare root as balled if the precaution suggested by Mr. Williams in protecting the roots were taken.—Editor.

MORE THAN A DAM SITE

How would you like to live in Dinosaur National Monument? That is just what the Bradleys have done, and they are going to show us March 17 with the aid of Kodachrome, some of the hidden nooks and crannies, known only to those who have learned the secrets of the lonely places. They are particularly well equipped to give us news of the activities in Dinosaur, for Mr. Bradley had been Ranger-Naturalist there for the past two summers, and Mrs. Bradley has been busy making plant collections from the area during the same time. Their interests cover the archeology and geology of the region, as well as its scenic beauties, and they won't neglect the living plants and animals, either.

This strange weird magical land where both past and present are revealed to the adventurous heart in all their beauty, is in danger of being lost to us, perhaps forever, under the water and silt which will gather behind the Echo Park Dam, so let's find out now what it is really like, from those who have been there, and perhaps we'll agree that Dinosaur National Monument is, MORE THAN A DAM SITE.

See schedule on page 5.



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THIRD ROCKY MOUNTAIN HORTICULTURAL CONFERENCE

ALL those who attended the recent sessions held at the Cosmopolitan Hotel felt well repaid for their time. The talks were informative, the pictures entertaining and the exhibits educational.

The commercial exhibitors also helped greatly to finance the conference, and we are greatly appreciative of this. A list of those participating follows. John Swingle and his committee worked hard and efficiently to line up these exhibitors.

Educational exhibits were arranged by Paul Morrow, Herbert Gundell and Edgar Warren. A list of them also follows.

The talks were varied in interest and any single session was worth the whole price of admission. Of course, Dr. Martin was a center of interest in his discussion of the Common Mold. W. R. Leslie, Superintendent of the Morden, Manitoba Experiment station brought a whole new list of plants which we could expect to grow here, and Dr. Hildreth from the Cheyenne Horticultural Field Station told us of some of the good unusual trees. Mr. Lease from Great Falls made two showings of his three-dimensional pictures, and all who saw them enjoyed them greatly.

Earl Sinnamon managed very efficiently the remarkable exhibition of sprayers and saws at City Park. Mrs. C. Walter Allen arranged details of the Annual Dinner assisted by Mrs. Garrey, who obtained and arranged the flowers. Dr. Alfred Bailey of the Denver Museum of Natural History showed a new film of New Mexico, The Land of Enchantment.

Lynette Heminway and her corps of efficient volunteer helpers deserve much credit for their efficient hand-

ling of the many details of registration and finance which go to making a smooth running conference. Mrs. John Swingle spent many days handling the recording machine and transcribing the talks for publication.

If you attended this conference, will you please sit down right now, while your memory is fresh, and tell us what parts of the arrangements you liked best and also how to improve the program another year?

COMMERCIAL EXHIBITS

Carson Brothers; Orchardair Sprayers
Elcar Fence, All Kinds Fences
Rocky Mountain Seed Company;
Pratt Insecticides, Hardie Sprayers
and Rapid-Gro Fertilizers
Speedcraft Tool and Supply Com-
pany; Mall Saws
A. Plonkey Associates; McCulloch
Saws
McCoy and Jensen; Fertilizers
Chemical Corporation of Colorado;
Insecticides
Parker Company; Sprayers
Swift & Co., Fertilizers and Insect-
icides
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Swingle Tree Surgery; Sprays and
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EDUCATIONAL EXHIBITS

Library, Horticulture House, Mrs. Kalmbach

Forestry, Denver City Forestry Department, George Stadler

School Grounds, Grounds Dept., Denver Public Schools, Paul Morrow

North High School, Denver Public Schools, Edgar Warren

Insects, Vaughan Aandahl

4-H Group, Denver County Agent, Herbert Gundell

Landscape Architecture, S. R. DeBoer

U. S. Forest Service, Don Bloch

Girdling Root, M. T. Slusher

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Full enjoyment of these trips will depend very much on proper preparation. Clothes should be suitable for the season, with warm clothes in winter and always a rain jacket in summer. Stout, comfortable shoes are always important. On one-day trips a pocket lunch is necessary, and overnight trips require a comfortable sleeping bag.

Registration must be made a couple of days in advance so that accommodations can be made for transporta-

tion. Expense will depend on distance travelled. Always inquire about the distance or difficulty of the trip and pick out those which fit your ability and interests. See the schedule on page 5 for list of trips in each month.

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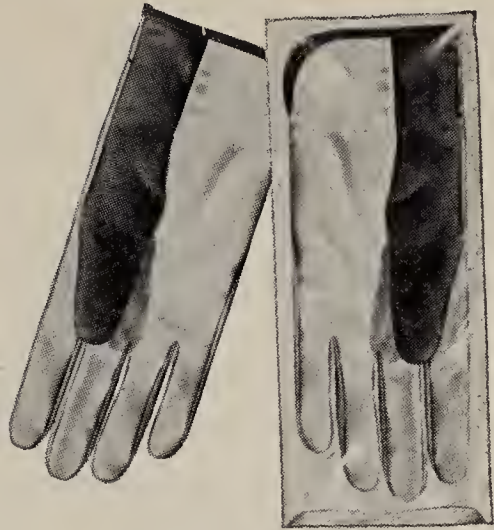
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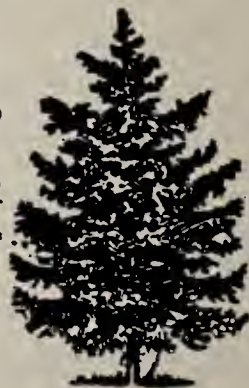
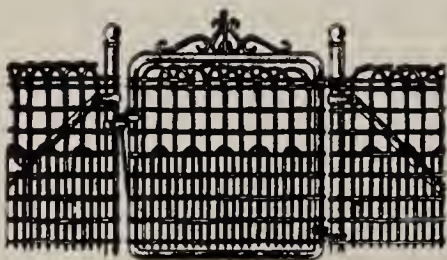
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Use the Library

The Helen Fowler Library at Horticulture House is fast becoming the most complete horticultural library in the western United States. As fast as new books are available they are secured and put on the shelves. Many out of print and valuable old books are also being installed. Helen Fowler has not only spent a great deal of her time reviewing and ordering these books but has interested a great many of her friends in participating in this good work, and has donated many books and much money herself. She is now writing book reviews and other interesting material to call your attention to the good things to be found in the library, which may be printed in each issue of the GREEN THUMB. Anyone is invited to come in and use the library and members of the Association may take out books for limited times.

New Books Just Received at the Library

- Bourne: Book of the Daffodil
 Goldring: Book of the Lily
 Jacob: Daffodils
 Grove: Lilies
 Lynch: Book of the Iris
 Marshall: Consider the Lilies
 Cameron Rogers: Trodden Glory, the Story of the California Poppy
 I. B. Lucas: Dwarf Fruit Trees
 J. L. Gibson: Carnations for Amateurs
 Jacobsen: Cultivation of Succulents
 Leeming: The Book of the Delphinium
 Maeterlinck: Old Fashioned Flowers
 Esther Matson: All the Year in the Garden
 McCollom: Vines and how to Grow Them
 Hayward: The Commuter's Garden
 Hoare: Flowering Trees and Shrubs
 E. Jellet: Rare and Noble Plants
 Jenkins: The Hardy Flower Book
 Moncrief: Kew Gardens, London
 Powell: The Chrysanthemum and How to Grow them
 Patteson: Week End Gardening
 Rexford: Four Seasons in Your Garden
 Egan: Making a garden of Perennials
 Smith: Dry-Wall Gardens
 Mima Nixon: Dutch Bulbs and Gardens
 Richardson Wright: Gardener's Tribute

Donors to Library for Months of January and February

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 Mrs. James B. Walton

Helen Fowler looks at Dr. Yokum's
PLANT GROWTH

What makes a good book? The author, of course. Its name first catches us, then the writer and finally the publisher. A worthy publisher never turns out a poor book—that is, hardly ever.

Could anything be duller than the title Dr. Yokum has chosen for his book—a book that is filled with first hand information which comes from a study of plants for many years. The author has taught biology at Ohio State, Penn. State, North Carolina College and is today in the thick of it at the George Washington University. Few writers have observed gardening at so many different levels. Dr. Yokum is far from an amiable and obliging writer—you won't argue much with him; when a plant needs mulching, you won't use a hoe; preparing a compost will be easy and you are nudged pretty hard about the importance of right soil preparation for various types of plants. When he tells us to do something in the garden he explains why; he carries us far beyond the "Weeding and watering" stage. "Plants don't just grow" he says and he continues to tell in a simple, easy way how the laws of nature and plant growth are related.

For those that have done little gardening **PLANT GROWTH** will serve as an admirable introduction—a little of the Burbank feeling may come to them, clearly knowing the why and wherefores. For the advanced gardener the book is filled with historical facts and many new theories.

The Table of Contents at the beginning will lead to the right chapter. There is a most helpful bibliographical reference at the end of each and too, this book has an index. There is a Glossary also at the finish—a sort of a one-page dictionary.

**Shrubs and Vines for
 American Gardens**

By DONALD WYMAN

To help in the selection of the better shrubs and vines, Dr. Wyman in his *Shrubs and Vines for American Gardens*, has carefully appraised some 3200 species and varieties, all cultivated today in the United States.

One of the most valuable lists however, is the one telling which plants NOT to grow. After many years of trial the author has culled over 1900 plants.

Dr. Donald Wyman has been the horticulturist at Harvard for the past thirteen years. He has collected his material and records from the planting of the world's famous Arnold Arboretum as well as from many of the larger botanical gardens throughout the country. This is the most authoritative guide to *Shrubs and Vines* in the Library at Horticulture House.

HELEN FOWLER.

—♦—
American Trees

By RUSSELL LIMBACH

This is a beautifully illustrated book with 55 different kinds of trees, all to be found in the United States. Pictures of many of these same trees were shown at The Rocky Mountain Conference this year, ably discussed by Dr. A. C. Hildreth and Mr. Earl Sinnamon.

T. H. Everett, horticulturist of the New York Botanical Garden, has this to say in the introduction: "The book, with its authentic drawings, paintings and its informative text, will help to acquaint you with trees familiar in the American landscape. It will mean for you not only a widened knowledge of nature but perhaps the beginning of strong and lasting friendships with some of mankind's oldest benefactors"—H. F.



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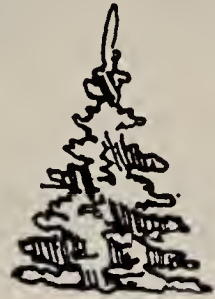
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LORD & BURNHAM, DES PLAINES, ILL.

MARCH GARDENING

No one can predict what the weather will be in March, but it is traditionally the time for wind, rain, snow and "bad" weather. This bad weather may give the soil much necessary moisture, which will be good. While it is disagreeable outside we are given a chance to catch up on all the little indoor chores, like ordering the seeds, planning the necessary remodelling and studying up on the new bug killers.

It may be that some nurseryman will get impatient and rush the season a little, sending the plants that you have ordered while it is unfit to plant them. If this happens, it is a good idea to open the packages so that the tops may get air but cover the roots with moist material so that they will not dry out. It is not a good practice to leave plants in water for long, but roses, for instance, may be covered completely with moist peat or sand a few days if they appear to be dried out when received. Often these things may be temporarily "heeled in" in a spot of unfrozen soil, at the south of the house.

About this time of year there is likely to be the old argument about whether sand or peat is better to loosen up heavy soil. Actually some of either or both will help. A little peat mixed into the soil twice a year for three years should make an easily worked soil out of very heavy clay. Better yet would be leafmold or manure which would furnish both chemical elements and improved physical condition. One caution is to avoid placing fresh manure near the roots of newly transplanted plants.

When planning additions or remodelling of grounds, it is well to consider the possibility of using some of the small fruits where there can be benefit from both their landscape effects and their fruit. Currants, Plums, Cherries and Crabapples are in this class.

Don't let the term "Design" scare you when used in connection with a landscape plan. This simply means good judgment in the arrangement of one part of a yard in relation to another. It is easy to understand that a consideration of Unity, Balance, Scale, Proportion, Repetition and such might make an attractive composition out of an otherwise mediocre one.

One of the great benefits of gardening is the annual renewal of faith that it gives us to see the new seeds sprout, the new leaves appear and flowers open. It adds greatly to our enjoyment if we do a little playing at least with propagation—by seeds, cuttings, grafts, buds or layers. Start a few tomato and zinnia plants in a box on the windowsill, experiment a little with making a few simple grafts and prepare some cuttings for setting out when it is warm. If you do not know how to do this, come in to Horticulture House and look at the process illustrated in some of the many books on propagation.

As you drive around the older sections of town notice the many mistakes made in planting unsuitable material, and learn to avoid these.

You have probably learned over the years to identify the plants that you work with by their bloom. Now is a good time to notice the woody plants and learn to distinguish between them by their bark, twig color, buds, remains of last year's leaves and fruit, their general shape, and, as the transplanting begins, from their roots of varying habit and color.



April, 1950

25 Cents

The Green Thumb

COLORADO'S GARDEN MAGAZINE



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THE COMMON MOLD

BROADLEAVED EVERGREENS

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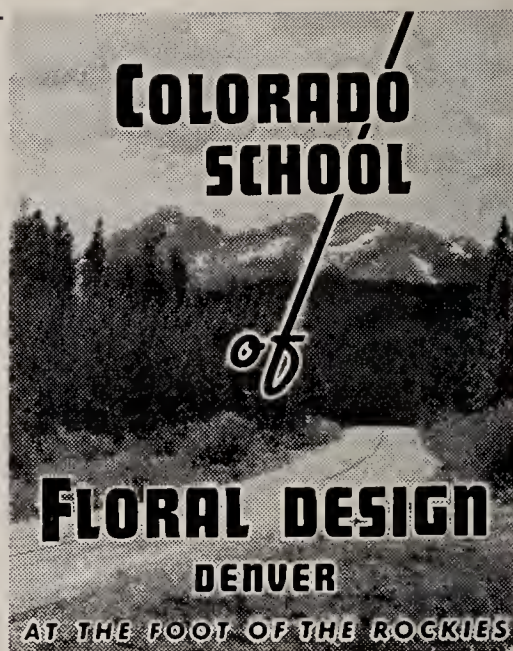
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The Green Thumb

Vol. 7

APRIL 1950

No 4

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Picture on front cover of our native Mariposa Lily. On back cover of Shooting Star, from painting by Emma A. Ervin.

GEORGE W. KELLY, Editor
MISS LYNETTE HEMINWAY, Assistant
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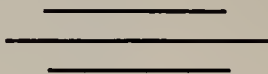
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PLANT NOW

April and May are the best months for planting nearly everything your nurseryman can furnish — Evergreens, Shade Trees, Fruit Trees, Flowering Shrubs, Roses, Hedges, Perennials, Vines, etc., etc. It is a very busy month for your nurseryman. Every moment of his time must count to the best possible advantage if he is to give satisfactory service to his customers. You can help him in his effort if you don't call him away from his work to demand preferred service and if you tell your friends to be patient and wait for their turns.

You can render your friends a real service if you supply them with a list of members of the Colorado Nurserymen's Association. You will find these names listed in the February issue of "The Green Thumb". These nurserymen know the kinds of plants that thrive under Colorado conditions. They will give you and your friends good service and good advice.



COLORADO NURSERYMEN'S ASSOCIATION

See the February Issue of the GREEN THUMB for List of Members



Colorado Forestry and Horticulture Association

Organized in 1884

"To preserve the natural beauty of Colorado; to protect the forests; to encourage proper maintenance and additional planting of trees, shrubs and gardens; to make available correct information regarding forestry, horticultural practices and plants best suited to the climate; and to coordinate the knowledge and experience of foresters, horticulturists and gardeners for their mutual benefit."

OFFICERS

President.....Mrs. John Evans
 Vice Presidents—Fred R. Johnson, Mrs. Robert M. Perry, Milton Keegan, S. R. DeBoer, Mrs. J. Churchill Owen, Mrs. George H. Garrey.
 Secretary.....Mrs. A. L. Barbour
 Treasurer.....Richard R. Osborne

APRIL SCHEDULE

- April 2. Sun. Meet at Horticulture House 8:30 A.M. for trip to Hamlin Gulch, old Ghost Town near Alice. Some early flowers should be seen.
- April 9. Sun. Meet at Horticulture House 7:30 A.M. for breakfast hike in vicinity of Red Rocks Park.
- April 13. Thurs. 8 P.M. Horticulture House. Rose Society.
- April 16. Sun. River hike, South Platte to Waterton. Joint with Gates Outing Group. Call for details.
- April 18. Tues. 8 P.M. Evans School, 11th & Acoma. Milton Carlton lecture. See announcement elsewhere.
- April 23. Sun. Meet Horticulture House 8 A.M. for trip to the White Rocks area near Boulder. Here are found very unusual plants.
- April 28. Fri. 7:45 P.M. Horticulture House. Recordings of bird Songs. See announcement elsewhere.
- April 30. Meet Horticulture House 8 A.M. for start of trip to inspect the Monument Nursery of the U. S. Forest Service. Trip will also include inspection of the Yucca Botanical Reserve and Van Briggles Pottery works at Colorado Springs.
- May 6-7, Sat. & Sun. Trip to Cucharas Canyon in southern part of

state for study of the flowers and trees in that area and inspection of Indian writings on nearby rocks.

Registration must be made by Friday evening for all outdoor trips so that transportation may be arranged. Call for more particulars of all these trips.

SPRING FAIR

The Ways and Means Committee headed by Mrs. Barbour and including many loyal friends of the Association have made preliminary plans for the much-talked-of Spring Fiesta. This will be held in the Civic Center on May 20th, all day. Growers of plants and dealers in garden accessories will maintain booths where their wares will be on sale. It is planned that the Denver Art Museum will also have booths where art objects will be made and sold. The committee from this Association will arrange for publicity and staging and will provide entertainment to attract prospective buyers and make of this a gala day. Light refreshment stands will be maintained by various groups.

Other cities have conducted similar affairs which have produced, rather painlessly, an income sufficient to cover half the operating expenses of their horticultural association. If all will cooperate we may do as well. There will be more details given later.



Above are shown some of the out-of-state participants in the 1950 Rocky Mountain Horticultural conference. Left to right they are: T. S. M. Lease of Great Falls, Mont.; Mrs. Lease; Dr. A. C. Hildreth of Cheyenne, Wyoming; Mrs. Hildreth; W. R. Leslie of Morden, Manitoba, Canada.

SECRETARY'S REPORT OF 1949

Activities and Accomplishments

Extract of report given by Mrs. A. L. Barbour, at the Annual Dinner of the Association, February sixth

AN ever-increasing volume of work has been done this past year at Horticulture House in the line of direct information and help given the public. It would take too much space to detail and describe the courses and classes, lectures and programs sponsored or given by George Kelly and associates during the year. These did not include, of course, the daily stream of "advice to the plant-lorn" that goes out by telephone, letters and word of mouth. As well as in the Green Thumb there has been a steady supply of excellent horticultural ma-

terial furnished the Garden Corner and Homestead page of the Denver Post. The association was fortunate to secure as assistant and secretary Miss Lynette Heminway, who aids in this work.

The various committees have also been busy in their fields of endeavor. The Roadside Improvement and State Parks Committee has enlisted a distinguished group of people who are making plans to beautify our highways and secure a strong state park situation. Mrs. Waring provided 30,000 copies of a very attractive folder

in color that will be used to promote the group's ideas of roadside clean-up and signboard removal.

The Conservation Committee under Mrs. Churchill Owen has made several trips around the foothill areas to select and study sites which should be set aside and kept as botanical reserves. They are determining ownership and will ask for the donation of chosen spots. This committee has sponsored a Nature Leader's Institute aimed at training people to teach nature subjects to children.

A year ago the association advocated a program that would establish Junior Forester Clubs in the elementary schools. This plan has been taken over by the City Forester's Office and

many such groups have been formed.

Mrs. Kalmbach and the Herbarium Committee have been at work steadily. Nearly 2000 specimens of wild flowers are now mounted and classified.

During the year the association accepted with regret the resignations of Mr. Shoemaker and his wife as Treasurer and Custodian after many years of devoted service. He remains on the board of directors. Their places have been taken by Mr. and Mrs. Richard Osborne.

No membership campaign was made last autumn. The board and Mrs. Leroy McWhinney, the present membership chairman, believe in an all year round persistent effort to get members. Please help us in this!

MINIMUM MEMBERSHIP RAISED TO \$3.00

The directors of this Association at their regular March meeting approved the suggestion to raise the minimum membership rate to \$3.00, taking effect July first of this year. This move became necessary because of increased costs, the Association spending about \$5.00 on every member in 1949.

Urge your friends to take out memberships now at the old rate, before the increase takes effect on July first.

BIRD BUSINESS

Birds will twitter in Horticulture House on Friday, April 28, at 7:45 p.m., when Mr. Maynard Stamper of Denver University brings his recordings of their songs to delight the ears of all green thumbs. He will also have a number of Kodachrome pictures to show, and a newsy chat about the home life of a number of the birds. Mark a big X on your calendar for Friday evening, April 28.

WHAT'S NEW ABOUT PLANTS

What a treat is in store for horticulturists, gardeners and their friends! It does look as if we were due for a *special* pleasure on Friday, April 18. Dr. R. Milton Carleton is coming through town, and promises to spend Tuesday evening with all who are interested in finding out what's new about plants and their care.

Dr. Carleton is well qualified to handle this subject, for his work with Vaughn's Seed Co. is primarily concerned with research along these very lines. And anyone who has followed his column, "Have you Heard" in *Better Homes and Gardens* magazine realizes that he is right up to the minute, and maybe a little ahead of it, with his latest word on new fertilizers, weed controls, growing tricks, plant varieties, and what have you.

This program is on a Tuesday evening, instead of our usual Friday. The time, eight o'clock sharp; the place, Evans School Auditorium.



THE COMMON MOLD: MAN'S FRIEND OR ENEMY?

THOMAS L. MARTIN
Brigham Young University

ALL lovers of the soil should be interested in this topic, for the molds, just like bacteria, determine when, how, and where a man shall live. They become very influential on the health problems of men, and have much to do with the fertility of the soil. The organisms are found on oranges, cheese, bread, and decomposing leaves. They produce odors and create "rotten" appearances, but their activities, in spite of this, makes them an object of nature and worth some of our investigation activities.

Plants are divided into four general groups. There are the seed plants, the mosses and liverworts, the ferns, and a fourth group which has the peculiarity of never developing stems, roots, or leaves. The fungus plants,

such as the mushrooms, the rusts and smuts of grain, are illustrative of this group of plants. Among these are a number of cottony, cobwebby, powdery materials which we call *molds*. With these organisms you and I have very much to do because these molds are either our friends or our enemies. They exert much influence on the lives of each one of us.

Are These Molds Foes of Man? In some instances, they are. They attach themselves to various kinds of organic materials, such as manures, foodstuffs, the flesh of the finger of a person, and the flesh of animals. They secrete a digestive juice which changes this organic material into a soluble state so that the mold can secure energy and food elements for the growth of the

mold body. They grow rapidly, and they happen to grow on things that you and I are very much interested in such as the food we eat and the tissues of our bodies. Under those conditions we say that they are foes. They produce a fusarium wilt disease on tomatoes and potatoes. They cause blight on chestnut trees and threaten the very existence of those trees. They kill house flies. They grow on skin, pus, and sputum. They grow on the tissues of man. They grow on the scalp and produce ringworm, on the hands and feet and produce athlete's feet. They grow on the mucous membrane of the lungs and produce a pneumonia-like disease. They produce "thrush" in the new baby's mouth. They attack the wax of the external ear of man and, at times, produce total deafness. They are responsible for many abscesses. They produce a number of other diseases which cause rheumatic fever-like infections. They get into the joints and muscles and produce pain and headaches, coughs, and chills. They produce diseases similar to tuberculosis. They cause emaciation and anemia and ulcerations on the skin. They grow on the face and the neck, and the shoulders and the buttocks of man.

These are just a few illustrations of the enemy-type of activities of molds that come from the soil. You and I are interested in them because the soil produces them. If this were all with which the organisms were associated, we would be justified in simply saying that they are, indeed, the enemies of man, but there are many evidences which indicate that they are good for man.

The by-products of their activity will drive disease from the face of the earth. Our soil fertility problem would be impossible of solution if it were not for these molds. The kind of world that we are living in is great

because of the work of these molds.

The common mold is not all enemy by any means. It is distinctly a friend, for it secretes substances that are detrimental to many disease-producing bacteria. About twenty years ago Dr. Fleming, of the University of London, found that a penicillium mold secreted a substance that would kill the organisms that cause sore throat and war wound infections. It killed the organisms associated with pus and with such diseases as gas gangrene, tetanus, boils, and carbuncles. Other investigators followed up Dr. Fleming's discovery and now it is known that the common penicillium mold, oftentimes called a "cheese" mold, has a curative effect for as many as eighty-nine different diseases caused by bacteria. The substance secreted by this mold that comes from the soil is known as "penicillin." Other molds have been found that produced clavacin and gliotoxin, and other penicillin-like substances. They work on the same disease germs that penicillin does.

Just recently there has been found a soil fungus, or mold, in the throat of a chicken that had picked up this mold from the soil. This fungus, or mold, was found to secrete a substance known as streptomycin, which has proved to be very effective against undulant fever, tularemia, dysentery, and possibly tuberculosis and bubonic plague.

Another anti-substance has been obtained from the common mold in the soil called eumycin. This substance helps to control tuberculosis, diphtheria, athlete's foot, and ringworm. Aureomycin from a soil mold was developed recently. Aureomycin will weaken the germs that cause "Q" fever and rickettsial, disease-producing substance responsible for Rocky Mountain Spotted Fever. Some investigators in Venezuela worked with 6,000 samples of soils and obtained

20,000 molds from these soil samples. These workers found a chloromycetin from one of the molds. This substance is proving to be a cure for typhus fever and certain virus diseases. More and more antibiotic substances are being produced by different molds isolated from our soils.

It is strange that the common soil mold has existed throughout the ages, and has produced these valuable substances. These substances have either been wasted in the soil, or have contributed to the balance in nature. These substances have probably kept in check many organisms that would have given much trouble to man. It is interesting to be living at the time when these molds have been discovered, isolated, and used to help men control disease. Never have we been so near to driving disease from the face of the earth as now, and this because of these wonderful substances secreted by the common soil mold. The soil mold is, indeed, a friend of man.

When one considers the freedom with which the scarlet fever organism has attacked the throats of children and how they killed millions and millions of these children in days gone by, how fortunate we should feel that such does not go on now. The typhoid organism has entered the mouth and passed into the intestines for generations and has gone through these intestines and gorged the spleen and other organs, and produced terrible fevers. Just think how free the Lock Jaw organism has been to give trouble to man and how the bubonic plague and many others have kept men's minds and bodies in bondage, preventing man from unfolding and developing into the kind of man that he is supposed to be. However, these germs have met their doom now because of the progress made in the understanding of soil molds and the antibiotic

substances which they produce. Under the hands of man they now control human disease. That the common mold of the soil is, indeed, a friend of man, is most encouraging and satisfying in this day and age.

There is another way in which to look upon the common mold as a great friend to man. There are 300,000 to 700,000 of them in every gram of fertile soil. They do a great amount of work there. That vast number of germs is bound to effect the soil so that the plants will grow much better. They depend upon the organic matter in the soil and decompose it to the point that plants can reap the benefit from the decomposed product.

There are some species of mold or fungi which can actually take the nitrogen from the air and fix it for the use of plants. A typical representative is the group of organisms known as mycorrhizal fungi. This type of fungus attacks the roots of forest trees, taking the place of the root hairs. In that way it helps the plant. The common mold will decompose manures when it is added to the soil. In fact, it is the first organism to bring about a decomposition of the plant tissue, so that the bacteria can carry on further decomposition. Molds cannot complete the decay, but they can start it.

These molds take the proteins and break them down into ammonia. In fact, we depend upon the mold more than any other organism to give us the ammonia for the nitrification process. The whole nitrogen problem in the soil is tied up very closely with the soil mold. The mold body is very resistant to decay. It contains much nitrogen, and because of this resistance, much residual nitrogen would otherwise be lost.

The dead molds are a source of organic matter for the decomposing bacteria. Because of their bulk and the

vast number in the soil, they become a recognizable quantity in a fertile soil. They are humus builders. We are learning that some of these molds will kill plant disease germs that are in the soil. We are finding out, because of our continuous investigations about soil molds, that there is a strong relationship between the science of soil microbiology and the science of plant pathology.

The molds help to granulate the soil. Some of the secretions from the molds are gluey in their nature and cement soil particles together into desirable crumbs. The mold threads wrap themselves around soil particles and help to develop crumbs. Thus, the soil is better able to become aerated, and water and temperature are much more under control. They have much to do with the control of soil erosion. When the problem of soil erosion has been solved, it will

be found that the common soil mold has been one of the greatest factors in that solution. Which ever way one turns, one finds a use for molds in the soil. We use them for tests to determine the need for phosphate, and the need for potash in the soil.

In summary, then, let us say that the common soil mold causes plant, animal, and human disease; therefore, it is an enemy. The common soil mold develops antibodies which help to control disease; therefore, it is a friend. The common soil mold is helping to drive disease from the face of the earth; therefore, again, it is a friend. It is the preponderant organism in the soil which makes possible the fertility essential for profitable plant production. "The common soil mold—man's friend or enemy?" can be answered in the affirmative. It is, indeed, a friend to man.

Do You Know When to Prune Shrubs?

The traveling trimmers will soon be around—just be careful they do not get into shrubs that are about to bloom. These spring-flowering shrubs are often robbed of their chief at-

traction—their bloom at this season—because pruning is done at the wrong time.

REMEMBER: the time to prune spring-flowering shrubs, when they need trimming, is immediately after the flowers have faded, cutting out all shoots that have just produced the flowers, **BECAUSE:** the bloom is produced on the growth of the previous year. All during the summer and fall these shrubs are getting ready to flower when spring arrives. This year your 1950 bloom will come if you trimmed the shrubs after they flowered in the spring of 1949. This year's bloom will come on the Lilacs, Pink and White Almond, Mock Oranges, Spireas, et cetera, if you did not prune during the summer, fall or winter.

HELEN FOWLER





THE DONALD C. BROMFIELD GARDEN

THE formality which is found in the Bromfield garden is of as much interest for the lines on which it was laid out as for its restricted use of flowers. Mr. S. R. DeBoer who laid out the grounds says, "All gardens need plenty of green with varying amounts of color. Most of them have too solid a mass of color and too little well-planned green."

A place was built here of inspiration and promise, and today, as Mr. DeBoer planned, it gives a pleasing appearance of age. He has made the

house a part of the garden, with his always-thorough understanding of the tie between the gardener's art and architecture.

Walking down from the terrace from which the above picture was taken, one comes into an open space of closely-clipped turf. There are evergreens, in large areas on either side, interspersed with careful accents of small tree growth and with ground-covers such as are rarely seen in Colorado gardens. The myrtle over the whole place is especially fine which

seems to come from its twice-per-year feeding.

Variety and surprises are provided by dividing the whole garden into many distinctive parts. How many gardens today are one large grass plot with perennial borders along the property lines. Their entire story is told in one sentence. "The reasonable complexity of a garden", says Mr. DeBoer "makes it inviting."

At the extreme east side, done in circular form, is the rose garden, banded by white Peonies. Outlining these, in turn, are those large grey-leaved iris, lavender and purple in color, giving a season of May and June flowers and an all-season bloom of some five hundred roses.

The large terrace joining the house is furnished in white and soft yellow. The planting here is always in white. This year it is done in *Sorbaria sorbifolia*,—spirea of a sort, creamy white in early summer with white Tulips for May bloom. At the north end of the terrace are white Lilacs, on either side of well-planned steps entering the greenhouse. On the east side is the evergreen *Euonymus radicans* shouldering itself up a low brick wall.

In this garden is an opportunity for the study of the blending together of the laws of architecture and of plant life. By catching a few of their secrets we should make more and more beautiful gardens.



WE FOUND SPRING

KATHRYN KALMBACH

AN optimistic group of "nature nuts" went out with Mrs. Dickenson to the Deer Creek Valley southwest of Denver on March fifth to help her find the spring that she had written about. We found Spring Beauties all around under the Oak brush and saw some Whiskbroom

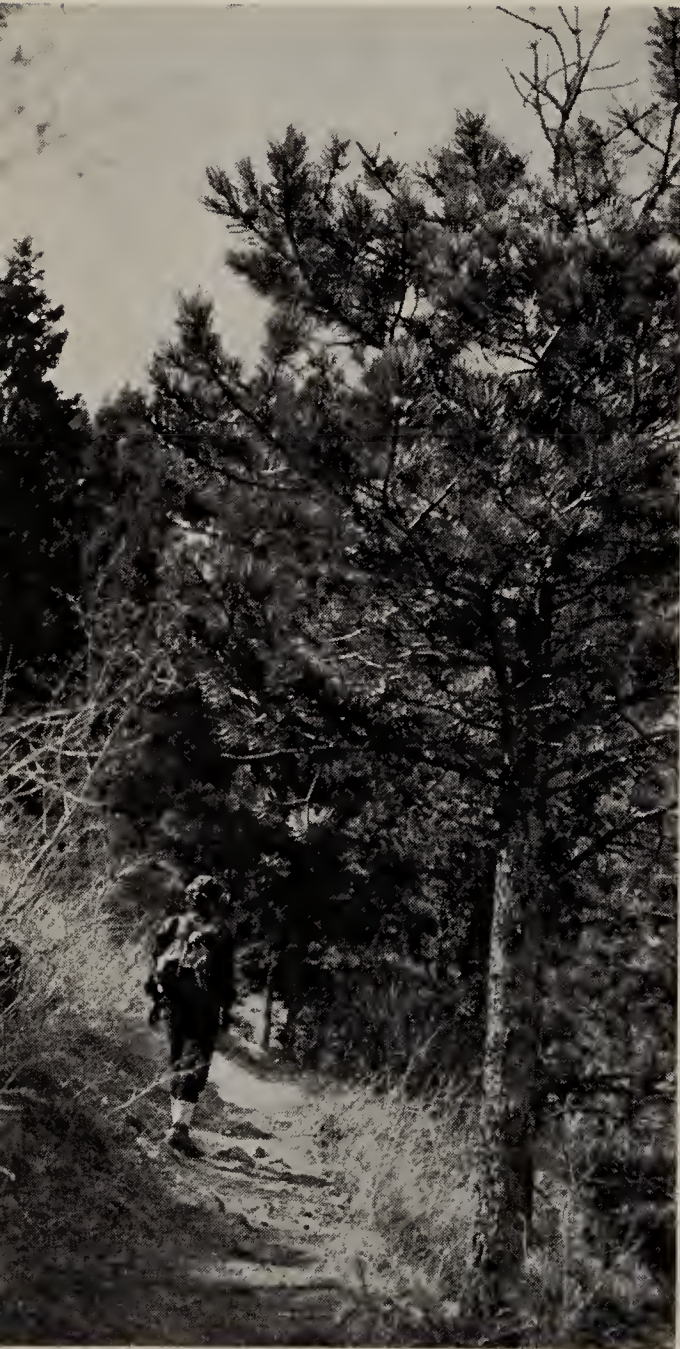
Parsley and Oregongrape starting to open their buds.

Was ever a day so perfect? Cloudless sky and balmy breezes made us wonder if the calendar was wrong—surely this must be May instead of March. But the little stream babbled along under a roof of crystal ice and we found little pockets of snow in every shaded hollow to prove the calendar right after all.

We could all see and feel, yes, and taste too, many sure signs of the coming of Mistress May. There were tiny green leaves and spears under the brown old leaves. The Willows, Alders and Maples had magically changed the color of their stems and the Aspens looked so clean and expectant. How good the earth smelled.

We saw little furry hoods peeking out of the ground near the sun-warmed rocks—were they little pixie bonnets? No, looking closer they were slowly uncurling to expose the dainty mauve petals of our beloved Pasque flowers. We knew that soon the slopes would be covered with their delicate dove colors. We also knew that soon the pure white, waxy sandlilies would decorate the bare sandy roadsides and meadows and the Easter daisies would keep their date with April. And what would be that bright red rosette, a bit higher on the hillside? The jewel-bright blossom of the ball or pin-cushion cactus, another early visitor.

We realized that a few more days of warm sunshine would start the procession of bloom that would make of every mountain meadow and slope a canvas of riotous color. We felt that this thrill of first finding spring was greater than that which would come later when we would be surrounded with the spring's full parade of color.





SOME SPRING FLOWERS TO LOOK FOR

L. J. HOLLAND

IT is very difficult to say which flower blooms first in the Spring, and where one would find it. Along the foothills the Pasque-flower is considered by many as a sure harbinger of Spring, while in the southeast part of the state the Easter Daisy is hailed as the first sure sign. However, I've seen both of them well covered by snow. The Sandlily is not far behind, if at all, and these are soon followed by members of the Violet family. The much despised Dandelion may even burst forth on a warm day while Winter is still with us, and golfers will vow that the White Plains Primrose is as early as any.

April also brings us the White Larkspur, earliest of the Delphiniums, and only slightly later the blue *Delphinium nelsoni* of the foothills, *Mertensia lanceolata* and *Erigeron flagellaris* are to be found on south hill-sides. It may seem strange, but flowers in the red shades are poorly represented at this time, and there is not an abundance of yellow, although Puccoon, Yellow Violet and Plains Golden Banner may be in evidence, and later in the month *Corydalis*, that golden cousin of the Bleeding-heart, is met with quite frequently.

May really ushers in the floral parade; a prelude, as it were, to the sym-

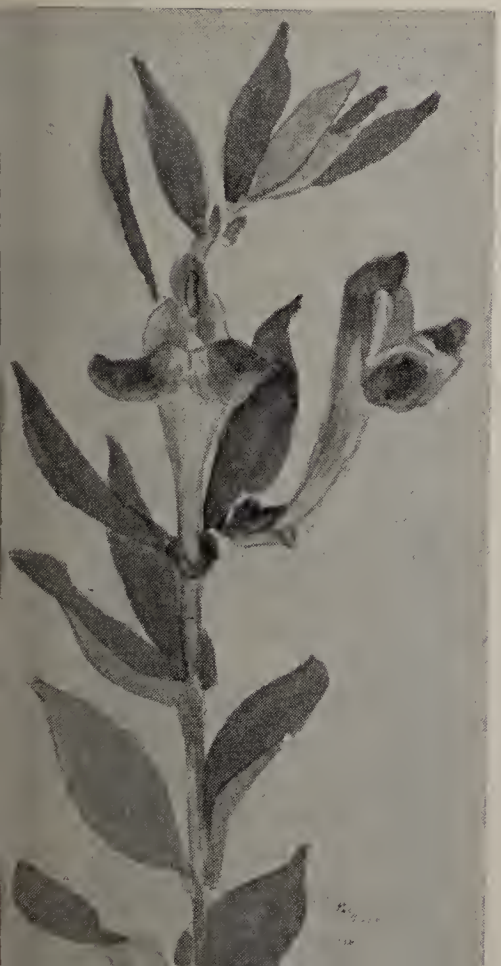


Pictures on this and opposite page are all from paintings by Emma A. Ervin. Above is the Easter Daisy, natural size. Below is one of the native trailing phlox, about three-fourths size. Above left on opposite page is one of the dainty Pyrolas, about half size. Above right is the tiny pink Twinflower about natural size. Below to left is the Skullcap, natural size. Below, right, the Snowball Saxifrage, reduced about one-half.

phony of June. Most of the flowers that appear in April will carry on into May and a great many more will add their colors to the panorama that is "Spring-time in the Rockies." This is

the month when the brighter colors get into the limelight. Pink Phlox, Loco (several varieties), Indian Paintbrush and the delicate Spring Beauty are all easily found. Dwarf Cornel,





Mariposas, (the most beautiful native bulb), and Canada Anemone are gems worth searching for in the foothills, as well as several varieties of Pentstemon.

Blue Flax, Native Iris, Leather-cup Clematis, Wild Lupine and our Colorado Columbine form a rhapsody in blue, although they will not all be found in one location. In the South-

ern Plains the Golden Evening Primrose and the largest of the Penstemon tribe (*P. grandiflorus*) steal the show from the Yellow Flax and Prickly Poppy, but Sand Verbena and Prairie Cone-flower (*Lepachys columnaris*) merit a bit of attention. Poppy Mal-low sometimes makes its bid during the last part of May, but more properly belong to June.

Chickweed, one of the common early wildflowers.





Globeflower, a common early flower in wet places at high altitudes.

The common Chokecherry, found along streams in the foothills and plains.







Pincushion cactus. Photo by Chas. J. Ott.



*Above, Dwarf Cornel or Dogwood, found only by those who get off the beaten paths and hunt in moist secluded places.
Below, False Solomon's Seal.*



ADVENTURES WITH BROADLEAVED EVERGREENS

ARTHUR BRAUN

IN writing on the subject of Broad-leaved Evergreens, I realize that I am walking on treacherous ground. To my knowledge at least, very little has been done experimentally with this class of plants in this region. After six years of experimental work, I have come to certain conclusions regarding their habits, cultural requirements etc., and in the following paragraphs I wish to tell you briefly of some of my findings.

RHODODENDRONS

For many years I felt that Rhododendrons were completely unsuited to our great Plains region for obvious reasons of too much wind, too much

alkali in the soil, too much cold and too little humidity and precipitation. However, the thought occurred to me that, in spite of these obstacles, the rhododendrons themselves might be consulted as to

whether or not they might find it congenial here. After considerable argument with certain rhododendron growers as to my sanity, I managed to buy 6 plants of the variety Caracatus and so started my first experiments with three beautiful evergreens.

KINDS

The native eastern rhododendrons are, by far, the hardest and easiest to grow. There are three principal species, namely: *Rhododendron maximum*, very tall type and with white

or pale pink flowers; *Rhododendron catawbiense*, medium in height with lilac purple flowers and *R. carolinianum*, a dwarf with rose colored flowers and much smaller foliage than the two preceding species. All three came through the severe winter of 1947-48 with no injury whatsoever even though I had some plants in full sun, others in partial shade and still others in full shade. I see no reason why these rhododendrons should not become common in this region if a few simple but exacting cultural practices are followed. As a final remark, I would like to point out that the foliage is better and the flowers last longer in full or partial shade.

The Catawbiense Hybrids, so called because they are derived principally from crosses between *R. catawbiense* and such European and Asiatic species as *R. ponticum*, *R. Caucasicum* and others, are much superior to the native species in flower and foliage. While these hybrids will stand about as much cold as the natives, they are more sensitive to winter wind and winter sun and therefore should be given some protection at least for the first 2 or 3 winters. I have found that they have a remarkable ability to adjust themselves to a given exposure even though it be in-full sun but should be hardened to such exposure gradually.

Of the 50 or more named Catawbiense Hybrids, I have tested the following: Mrs. C. S. Sargent, pink with golden spots; Mrs. P. Den Ouden, a low growing compact red; Dr. Desselhuys, a tall crimson; Roseum Elegans, orchid pink; Purpureum Grandiflorum, lilac purple; Michiael Waterer, red with black spots; and Car-



acatus, a purplish red. Mrs. C. S. Sargent is definitely the hardiest of all I have tried but Mrs. P. Den Ouden and Dr. Dresselhuys are very close seconds.

By far the most magnificent of all rhododendrons are the English and Dutch Hybrids. They are not considered hardy except in the Pacific Northwest but some varieties like Pink Pearl, Cynthia and a few others have been found growing successfully in New York state. I have under test at present the following: Pink Pearl, Cynthia and Mme. de Bruin. At this writing they are holding up as well as the Catawbiense Hybrids. However, I would like to warn against using this class until they have been more thoroughly tested.

There are two species that I would like to comment on for the very good reason that they are supposed to grow in limestone soil. *Rhododendron hirsutum* from the mountains of Central Europe with carmine pink flowers and light green foliage, and *R. wilsonae* from China with small lance shaped leaves and magenta flowers. I have tried *R. wilsonae* and find it hardy. I use plenty of peat in preparing the

soil but find that no other treatment is required as far as soil reaction is concerned. I have not tried *R. hirsutum* simply because I have not been able to find any plants in this country. Both species are dwarf—rarely more than 3 feet at maturity.

CULTURE

Soil preparation for rhododendrons is quite simple. About one foot or more of soil is removed from the bed. If the soil is a medium or sandy loam, it can be saved and treated with a mixture of sulphur, aluminum sulphate and iron sulphate in equal parts. This mixture is applied at the rate of 3 pounds to each 100 square feet or up to 5 pounds per hundred square feet if the soil pH is high. A soil test would be the best way to determine the proper amount to be used. Heavy, sticky clays are not desirable but can be used if enough humus is used in the bed preparation. Having treated the soil as prescribed above, humus in the form of peat moss or still better a mixture of peat and leaf mold is added until the final mixture contains about 50% humus (60% or more if the soil is clay). The bed is then filled level and is ready for planting. Rhododendrons should never be planted deeply because their root system is very shallow. After the plants have been set, and the bed thoroughly soaked, the soil will naturally settle an inch or two. To bring the bed back up to level, a mulch of peat moss and leaf mold is placed over the entire bed. This mulch should be replenished each year because rhododendrons seem to thrive best where there is mulch of decaying humus above their roots.

The use of cow manure as a source of food and humus depends on soil conditions. Where soils are naturally very acid, old cow manure can be used—in fact I have seen excellent

Rhododendron albiflorum, photographed near Gilpin Lake in Routt County.



plantings on the Pacific coast where peat and manure were used. However, under our soil conditions, the use of manure in any form might be fatal unless it were treated first in some way to neutralize the alkalis it contains. Last summer I carried out an experiment by treating cow manure with a soil souring solution developed by the Sudbury Laboratory. This treated manure was mixed with equal parts of peat and applied around the roots of a rhododendron plant. By the end of the summer I could detect no adverse effects. What will happen this coming summer remains to be seen.

Mulching for winter, in my opinion, is absolutely necessary. It is, in fact, the key to successfully winterizing rhododendrons—the hybrids more particularly than the natives. Here at Cheyenne, the mulch is applied about the middle to end of November depending on the season. At this point, I wish to stress two very important details. First, the bed should receive a very thorough soaking and second, the mulch should be applied *before* the ground freezes. I find that the best material for winter mulching is newly fallen leaves. With these I cover the bed to a depth of from 8 to 12 inches. This covering insulates against deep freezing and thereby prevents excessive foliage burn even in very cold or very dry weather.

Pieris floribunda (Lily of the Valley Shrub). Few broadleaved evergreens are hardier than this attractive member of the family Ericaceae. Because of its neat habit of growth, its interesting lily-of-the-valley-like flowers and evergreen foliage, it seems to me that it should be more widely used in foundation plantings particularly in shaded or semi-shaded spots. It will also grow in full sun but like most all members of the heath family, should

have a constant supply of moisture and a permanent mulch. Otherwise it is easily grown. Most authorities insist that it requires an acid soil but I have grown all of my plants without treating the soil in any way. Liberal amounts of peat moss or leaf mold, however, should be worked into the soil and a mulch of the same materials maintained around the approximate root run of the plant.

Kalmia latifolia (Mountain Laurel). I have tried this beautiful shrub for a number of years but have had only indifferent success with it. Most authorities seem to feel that it is much more adaptable to a greater variety of soil and climate than rhododendrons. Under our conditions, I find that the opposite is true. It seems much more exacting about soil and will not tolerate clay at all. The foliage burns badly each winter when planted in sun (contrast this with the ability of many rhododendrons to adjust themselves to sunny spots), and is subject to severe winter injury in shaded but windy locations. In Denver this shrub may prove satisfactory and is certainly beautiful enough for a good try at least. Its cultural requirements are about the same as rhododendrons.

Hollies are not difficult to handle. I find that they like plenty of humus worked into the soil but so far have not been too particular as to soil reaction. There is some controversy on this point however. Most plantmen in the far eastern states believe that an acid soil is necessary particularly for *Ilex opaca*, but Dr. Chadwick of Ohio State University states that this species and its varieties will grow in a soil range from 6.5 to 7.5 but concludes that even this is not absolutely necessary.

It seems to me that plantmen in our western plains region have long overlooked a good thing in *Boxwood*.

While it has its shortcomings and its limitations, I believe that it can be widely used if a little care is exercised in giving the proper exposure. In my experience with it, I find that the worst enemy of Boxwood is an excessive amount of winter sunshine. When planted on eastern, western, or northern exposures, very little if any injury occurs. But when exposed to all day winter sunshine, severe burning usually results. Because there is a great variation in the hardiness of individual plants, I believe that plants-

men in this region could develop strains of Boxwood that could be grown in any exposure.

Pyracantha coccinea lalandi (Laland Firethorn). This Firethorn, in my estimation, is one of the very best of all broadleafed evergreens for this region. From a hardiness standpoint, it rates equal to if not superior to many of the common deciduous shrubs that are used around here. True, it stands transplanting poorly but I have had no trouble when B&B or potted stock is used.

TIRED OF GLADIOLI?

Try Gladixia, Coppertip and Tigerflower

M. WALTER PESMAN

THE old Mexican name for "garden" was *Xochitla*. The great Emperor Montezuma begged to be allowed to see his *xochitla* once again, before being put to death by Cortez. This was granted.

Was the *Tigerflower* (*Tigridia*) among his gorgeous plants? Most likely: it deserves a place in any show garden. Few flowers are as brilliant; reds, yellows and whites with conspicuous darker spots, arranged in a flaring cup, and fragrant withal—what more can you desire? They are as easily grown as glads, and require similar cultivation. Plant the corms in warm soil, expect flowers in mid-summer, dig in fall, store over winter.

The only "but" is that each flower lasts only one day; however, each stalk keeps on sending out new blossoms for a long time, so that there is continuous bloom from just a few bulbs. Buy in Denver.

Gladixia, Acidanthera bicolor.





Golden Coppertip, *Crocosmia aurea imperialis*.

Gladixira (*Acidanthera bicolor*) comes from Abyssinia. The Royal Horticulture Society gave it an Award of Merit in 1936, but it is still not well known. Its pure white flowers have a blackish-crimson center, at other times described as blotched-chocolate brown (flower descriptions never are too consistent). Its fragrant flowers occur from July to October. In less warm climates than ours they are sometimes grown in large pots during summer, which are brought inside to blossom in October. Fifteen to eighteen inches tall.

Coppertip (*Crocosmia aurea*) should be tried in Colorado and New Mexico. Like the preceding two flowers, it has summer-flowering corms, to be treated like glads. It has large two-inch luminous orange flowers, quite free from any marking or freckles; blooms in August and should do well here. Its "but" is that it is difficult to get in this country. Perhaps that makes it all the more sought-for? Oh, well, if foiled you can always console yourself with *Tritonia* (*Montbretia*)!

WE MUST HAVE RESEARCH

In Ornamental Horticulture

The ornamental trees, shrubs, lawns and flowers in this state represent a great value—probably greater than any one group of commercial plants such as peaches, potatoes or cantaloupes; yet there are practically no sources of authentic information on the problems and pests encountered in growing these plants. In the last few years many new insect and disease pests have appeared which in some cases have threatened to wipe out entire species. What information that there is available on the control of ornamental pests in the East, usually does not apply in its entirety here and is often misleading.

We might select three specific problems that need attention at once. First, we all need help badly in solving the problems of insect damage to trees, then we need experiments in better adapted lawn grasses and we need help in introducing and breeding a greater variety of plants which will tolerate the difficult conditions found under our high-altitude, plains and irrigated situations.

Tigerflower, *Tigridia pavonia*.



EVERGREENS SUITABLE FOR LANDSCAPE USE IN COLORADO

I—Indicates usefulness in irrigated areas. M—In mountains. P—On the plains.

TALL—20-60 FEET

Ponderosa Pine MP—A coarse, irregular, native tree. Suitable for informal use where there is plenty of room. Drought resistant.

Austrian Pine MP—Similar in size and habit to the Ponderosa Pine, but darker and denser.

Scotch Pine P—The most rapid growing of all pines for this area. Grows in tall open effect, not as beautiful as either Austrian or Ponderosa Pine.

White Pine I—Graceful habit of growth and soft green needles. Subject to winterburn when young.

Limber Pine IMP—Our native white pine. Slow, irregular growth. Should be used more.

Bristlecone Pine IMP—Another native, 5-needle pine. Naturally slow, branching growth which habit may be encouraged by yearly pinching.

Lodgepole Pine IM—A tall, slim native, with yellow-green needles. Makes a good specimen tree when it is given room.

Colorado Spruce IM—Seedlings may vary from green to blue and silver. A stiff, symmetrical tree. Eventually becomes very large.

Englemann Spruce M—A native of high altitudes. Seldom as good in color or shape as the Colorado.

Black Hills Spruce I—Short needles and dense habit of growth. May be kept small by pinching the candles.

White Fir IM—Our most beautiful native tree. Of much the color and habit of the Blue Spruce, but softer effect. Subject to winterburn when small.

Douglasfir M—The Christmas tree of this area. Similar in habit to Spruce but of softer effect. Should not be planted with spruce because of insect damage.

Alpine Fir M—Tall erect tree, native to the high mountains. Seldom used in ornamental plantings. The variety known as "Corkbark Fir" seems to have possibilities.

MEDIUM—6-25 FEET

Pinyon Pine IP—Irregularly round in habit. Likes a dry warm place. May be trained to stay small indefinitely.

Rocky Mountain Juniper IMP—Native on the eastern slope of the Continental

Divide. Usually tall and symmetrical. Varies in character from seedlings. Named grafts are becoming most popular. Some of these are the "Pathfinder," "Sutherland," "Blue Moon" and "Gray Gleam."

Redcedar IP—The eastern, native juniper which generally is poorer in color than our Rocky Mountain native. Some good grafts have been introduced. Some of these are the "Canaert," "Keteleer," "Cypress" and "Dundee."

Oneseed and Utah Junipers IMP—Similar in habit. Often irregular and many stemmed. Generally round in character. Tolerates dry, hot conditions. Oneseed Juniper seems to be better suited to Denver conditions than Utah Juniper.

LOW—2-6 FEET

Mugho Pine I—Seedlings from various sources may vary from 2 feet to 10 feet high at maturity. May be clipped to keep them dwarf and dense. Tolerant to heat but not shade.

Mountain Common Juniper M—A hardy native. Variable, but generally beautiful except towards spring when they are often brown.

Pfitzer Juniper IMP—The best all around evergreen of this size. Rapid, feathery growth, virtually pest free. May be sheared into any shape. The "Plume" and "Compact" Pfitzers are smaller than the regular type. "Table Top Juniper" is a spreading type of the Rocky Mountain Juniper. It is used similarly to the Pfitzer.

Savin Juniper I—Well-known but not as good as the Pfitzer as it becomes bare and leggy with age.

Vonehron Savin Juniper I—Very rapid growth, somewhat similar to the Pfitzer.

Tamarix Juniper I—Dense, mounded habit of growth, fine winter color. The best of its size, seldom growing over 3 feet tall.

Dwarf Alberta Spruce I—If planted on the north or east side of the residence is hardy and furnishes a specimen plant in miniature that is distinctive and unusual.

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Andorra Juniper I—Irregularly spreading. Turns purple in winter.



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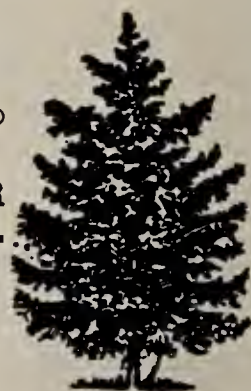
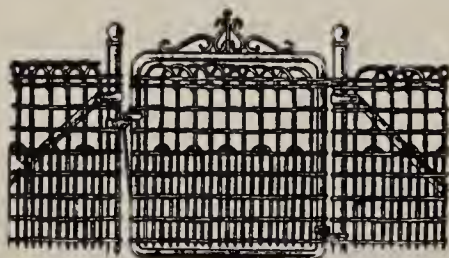
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JOHNNY-JUMP-UPS

KATHLEEN MARRIAGE

THIS is one *Viola* that really enjoys climate and soil in Colorado or perhaps it is so eager to live and multiply—that almost any soil and climate will serve.

It is not a plant for the connoisseur but it is a wonderful help to the owner of a new garden with wide open spaces to fill. Each plant makes a tidy little green mound about six inches high and wide, above which it carries a great flock of perky miniature pansies. One variety has upper petals dark purple, lower ones yellow with a little wisp of purple chin-whiskers; another all yellow with purple veining. It would be interesting to see a cross between these and *Viola tricolor*. Some gardener with a broken leg might try this. Other gardeners don't have time.

Seeds are so eager to germinate that new plants keep popping up any

time except mid winter. Plants in sunny protected spots bloom as early as February but the big chorus is about May and June. In early July it is time to be heartless and pull up all the plants that look tired from flowering. There will be seedlings galore for bloom in September, October and next spring.

One of the best ways to start these is to acquire some going-to-seed tops and scatter them in the desired area. This is a fairly safe and lazy way to sow many kinds of seed; from the present ripe seeds through the progressively ripening of other pods there are more opportunities for suitable moisture and temperature than if ripe seeds are sown all at one time.

After a year or two these Johnny-Jump-Ups may be much too prolific but they are no harder to pull up than their neighbor weeds.

PRIMROSE PATH

FRANCES BINKLEY

HARDY primroses are plants we are likely to associate with the shade and moisture of English woodlands and gardens. It is a surprise, but a pleasant one, to find how much at home they make themselves in a Colorado garden. They like the cool summer, and if we provide a light shade, and water at the time of blooming, they are quite happy. As for drainage, that is the one requirement that mountain gardens can most easily meet.

Favorite *Primula*, for its sturdy growth, is the *Polyanthus*, with its cluster of flowers on a ten-inch stem. Later in blooming than some of the others, its spring blossoms usually escape our last snow and frost, but it will survive a snowfall while it is in bloom, with little injury.

In the half shade of an apple tree, in soil made loose and rich with manure, *Polyanthus* primrose will increase so rapidly as to require dividing every other year. Winters such as that just past do not injure them. The greatest danger of loss is in late winter or spring, when too heavy mulch, or water standing about them may cause the crowns to rot.

March is an excellent time to start the seeds. They are rather slow to germinate, and if started in a flat and set out doors, the spring frost and showers help them along.

Polyanthus primrose is like the pansy in being a flower with a real personality. It has a modest appearance, neat habit of growth, the bright flowers are gay but not gaudy, and attractive for spring flower arrangements. The dark, crinkled leaves have a fresh appearance in the beds all summer. Where space can be spared,

they well deserve to be grown in great masses, at the edge of shrubbery, or along a path through the woods.

Hobbyists find *Polyanthus* an interesting subject for hybridizing. The white and yellow Munstead primroses, grown by Gertrude Jekyll in England a generation ago, are still favorites. Large-flowered varieties developed since her day, however, provide an infinite range of colors, in the pink shades and orange-reds. There is a national society, whose members share their experience with *Polyanthus* and other *Primulas*.

Success with *Polyanthus* in a Colorado garden will lead to a try at more difficult primroses. *Acaulis* is an earlier blooming species. It includes a good blue variety. Among the Asiatic forms are *Primula denticulata*, which dislikes a dry summer, and *P. Sieboldi*, which has a creeping habit of growth, and drops its leaves after blooming.

Juliae hybrids, from the Caucasus, are hardy and good rock-garden subjects. *Candelabra* types are suggested for planting at the edge of pools or for low places in a rock garden. Of these the *Bulleyana* hybrids are the latest in bloom, so that a succession, from the *Auriculas* in early spring until the *Bulleyanas* in midsummer may be arranged.

With hundreds of primroses, from all over the world—not forgetting our own high mountain Parry's primrose—the gardener may choose varieties for his garden according to color or season, and find a real challenge in growing the rare or difficult kinds.



If your trees are not growing properly they may be benefitted now by an application of fertilizer. This is usually a job for your expert tree man.



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QUESTIONS & ANSWERS

Question: When a maple tree and two evergreens were delivered to me, the place for planting was not ready. They did not appear dry when they were set in the ground; however, the maple lived but the evergreens died, why?—Mrs. H. G. R., Fort Collins.

Answer: The sap of deciduous shrubs and trees is of a liquid nature. While one drying out does not help them, it doesn't kill them either. The sap of evergreens is of a resinous nature—one drying out solidifies the sap to rosin. All the water in the world later is not going to start it flowing again. Even though, for a long time, the plant's foliage looks alive and green the plant is dead. If it is necessary to hold evergreens out of the ground, even though balled and burlapped, it is a good idea to set them in a bed of damp peat moss.

Question: I have a large rose bed. Should I use the hoe here or mulch beds? —L. G., Loveland, Colo.

Answer: Mulching is preferable—it reduces the amount of labor, helps to hold moisture, keeps the soil cool, and does not disturb the roots.



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Horticulture House, for the Month of March

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Garden in Your Window — Jean Hersey.

How to Garden in the Country Without Farming—Milton Weed.

The Making of a Garden — Ethelind Fearon, London.

The Joyful Gardener—Agnes Rothery.

Saturday in My Garden — A. Cecil Bartlett, London.

Garden in Your Window — Jean Hersey.

New Books Received During the Month of March

The Herbaceous Border — Frances Perry, London.

Hardy Bulbs for Amateurs — Joseph Jacob, London.

15 Ways to Make Money in the Country—Haydn S. Pearson.

Gardening for Pleasure—Peter Henderson.

Several new bulletins from the U. S. Dept. of Agriculture.

“Of Husbandry” in 12 books and his book Concerning Trees—L. Julius M. Columelia (Latin classic in agriculture done in English with citations from Pliny and other authors) London, 1745.

The Theory & Practice of Gardening—done from the French Original by John James of Greenwich, 1709.

MONTAGUE FREE AND HIS GARDENING

Does your garden lead to a few shrubs, or a single tree or perhaps a shy little plant in a clay pot? Have you a pretty little spot with a few good-looking rocks and a small pool, or a touch of woodland, with flickering sunlight and Virginia bluebells? Perhaps you have only a bed of lettuce, a few hills of cucumbers or a row or two of corn and beans; then you need Montague Free to help you in all of these and more problems. Nothing is omitted in the way of advice for the novice—it is all good for the seasoned gardener too.

You can tell by the reading of this valuable book that Mr. Free has answered about all of the thousands of questions that have come to him for a quarter century at the Brooklyn Botanic Gardens. A few years ago he headed the Garden Guide department of the New York Sun and I believe he is still there.

One thing worthy of mention here is with what misgivings the author mentions varieties of plants. He is smart in knowing that those plants which in most cases are the best kinds this year will be superseded by others in next year's catalogues.

H. F.

QUESTIONS

Question: I am interested in white Peonies only. Please tell me the names of some of the best.—L. H., Arvada.

Answer: Several years ago, Mr. Brand published what he considered the best among the whites in the *Bulletin of the American Peony Society*. I have the selection from Mr. Brand, who has himself given us many Peonies. Here it is — copying from the *Bulletin*. In the first place I am going to name ELEVEN splendid whites, not one of which I should ever want to be without. They are GRANDIFLORA NIVEA PLENA, FESTIVA MAXIMA, DUCHESS DE NAMOURS, MME. De Verneville, AVALANCHE, JAMES KELWAY, BARONESS SHROEDER, MONS. DUPONT, MME. EMILE LEMOINE, COURONNE D'OR and MARIE LEMOINE. *Grandiflora nivea plena* is the earliest good white. It bears immense flowers of great beauty. *Festiva Maxima* is an old variety but it is still one of the most sought-after of all Peonies. *James Kelway* is one of the best whites in existence. *Mme. Emile Lemoine*, as a rule, creates a sensation when exhibited among the finest Peonies. *Marie Lemoine* is a late variety; it produces very large beautifully-formed flowers. They are creamy-white, showing golden stamens. It is the most sweetly-scented of all Peonies. I consider it Calot's masterpiece.

Question: Shall I plant Lilacs now or is it better in the fall?

—T. N., Denver.

Answer: You may plant Lilacs in the spring or fall. Lilacs are among the best shrubs, not difficult to move and will grow under almost any condition.

GARDENER'S TRIBUTE

By the Urbane and Witty
RICHARDSON WRIGHT

Richardson Wright, editor of *HOUSE & GARDEN* and a gardener himself for over thirty-five years has written here a book to make glad the heart of anyone who loves flowers and growing things. What is this *Tribute*, to whom or what? In this book he has attempted, he says, "to make the past of gardening and gardeners of the past come alive." "Some of them", he adds, "were not too respectable."

There are nine chapters in this book, each one dealing with a famous botanist or gardener of the past—there is Robert Fortune, for instance, who in the days when foreigners dared not travel in China, journeyed all over that country disguised as a Chinese and bearing the name of Sing Wah. There is also the story of the rose garden of the Empress Josephine, others about Rondelet, the great bird man Audubon and many more.

He spends much of his time writing books, not all on gardening. "I enjoy", he says, "delving into old town histories and the yellowing sheets of obscure country presses for odd bits of information." Mr. Wright is the "bedbook" man, you know—The *Bed Book of Travel*, The *Gardener's Bed-Book*, Another *Gardener's Bed-Book*. Around 1910 while in Siberia and Manchuria, he wrote three books on Russia and Siberia.

One of his critics says, "Gardener's Tribute is the work of a cultivated mind brought lovingly to bear on the subject closest to the author's heart."

He has a delightful summer home in Connecticut where he does most of his writing.—H. F.

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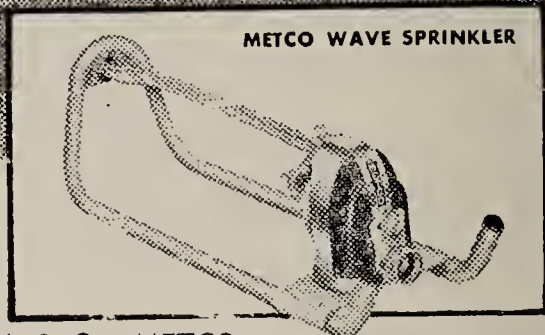
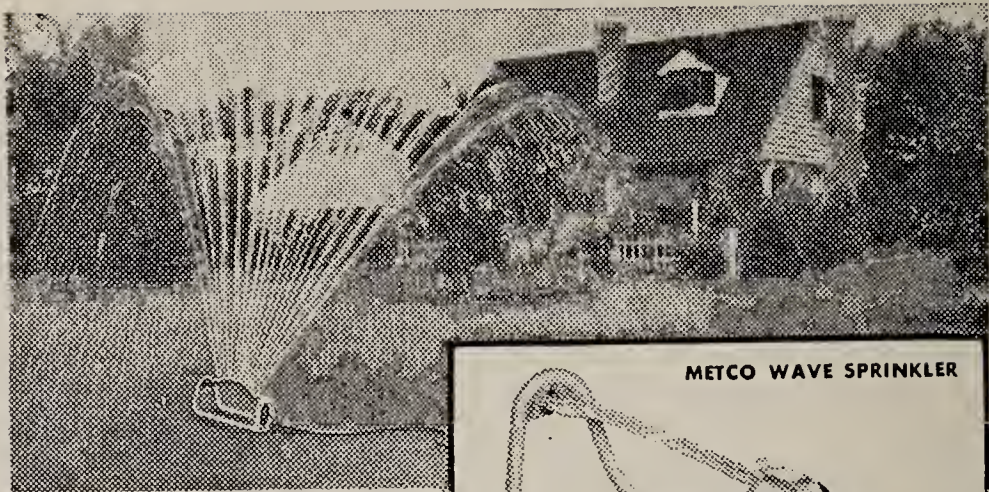
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APRIL GARDENING

PREPARING SOIL

Properly preparing soil for planting is probably the first and most important gardening chore for this month. Grass, trees, shrubs or flowers planted in good soil will thrive so much better than those planted in poor soil that much of the later spraying and fertilizing will be eliminated. All our Colorado soil needs humus to improve its texture and plant-food value. Both heavy clay soil and light sandy soil will be benefited by mixing peat, manure, leafmold or other organic material with it before planting. Soil which contains much lime, plaster or lifeless subsoil should be removed and replaced with good soil.

PLANTING

This is the time to plant woody material such as trees, evergreens, shrubs, roses and vines. Your plans should have been made and orders in before this so that all attention can be given now to getting the plants back into the soil promptly and properly. The ground should be warming up a little now so that lawns may be planted. The grass planted now will not grow much until the soil is fairly warm, but when planted late in the spring it will require closer attention to prevent baking. Always remember that roots belong below the surface of the soil where they are protected from excessive drying out, so protect the roots of plants which are out of the ground with wet burlap or by heeling-in in moist soil.

PRUNING

Almost any of the trees and shrubs may now be pruned with the exception of maple, birch and walnut. Do not do more than emergency work on early blooming shrubs if flowers are wanted this year. Extensive work on shrubs is best done right after blooming time. Most tree trimming work will require equipment and experience only available to commercial tree experts. Our trees deserve the best (which is also the cheapest in the long run). Most woody plants which have been transplanted this spring should have a careful thinning or cutting back to reduce the number of buds which the restricted root system must supply with sap.

SPRAYING

Scale insects on Elm, Maple, Ash, Cottonwood, Pine, Dogwood, Lilac or Cotoneaster should be killed now with a dormant oil, lime-sulphur or similar spray. A dormant spray may also help to control certain other insects such as spidermites, and aphids. Sprays of arsenate of lead for the control of codling moth damage to apples are usually made at the time of the first petal fall. DDT is now replacing this treatment, but requires additional attention to prevent a build-up of spider mites. Most contact and stomach poison sprays will be done a little later when the first insects appear. Little can usually be done now for the disfiguring aphids on snowball. They can be controlled in fall just before the leaves fall. More and more attention is being given in recent years to preparations which will kill the crabgrass seed which is on the ground, before it has an opportunity to sprout.



E. A. A. 1891

May, 1950

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The Green Thumb

Vol. 7

MAY, 1950

No. 5

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Business and Factory Sites:

Only recently has much been done about beautifying these commercial places. Look around and see the few good examples. Those who have tried it report that it pays big.

Roadsides:

Every year we are spending more time on the road. The roadsides and approaches to towns need not be bare and desolate. In most cases it is just a matter of returning some man-made plantings to replace the natural beauty destroyed in the process of building roads and towns.

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"To preserve the natural beauty of Colorado; to protect the forests; to encourage proper maintenance and additional planting of trees, shrubs and gardens; to make available correct information regarding forestry, horticultural practices and plants best suited to the climate; and to coordinate the knowledge and experience of foresters, horticulturists and gardeners for their mutual benefit."

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MAY SCHEDULE

May 5. Fri. 7:45 p.m. Horticulture House. Miss McDaniel's talk on Drug Plants. Everyone welcome. See details on page 28.

May 6. Sat. 1-9 pm. Nature Institute Field Trip to Daniel's Park Area. Nature Games and campfire conducted by Dr. and Mrs. Moras Shubert.

May 6-7. Sat. and Sun. Cucharas Canyon overnite. Leave Horticulture House 1 pm. Sat. Overnite equipment needed.

May 10. Wed. 7:45 p.m. Horticulture House. Those who have collected wildflowers may bring them for identification by the experts. If desired this will be a monthly event throughout the summer.

May 14. Sun. 9-4 p.m. Last session of Nature Institute. Field trip to Rampart Range Road Area. Learn the interesting things about the native plants through games and treasure hunts. Conducted by George W. Kelly.

May 21-27. Tentative date for trip to Dinosaur National Monument.

May 26. Fri. 7:45 p.m. Evans School, 11th and Acoma. Control of Insects in the Garden, by R. V. Seaman. See details on page 7.

May 26, 8 P.M., Horticulture House. The Denver Cactus and Succulent Society. Anyone interested invited. See story on page 16.

May 27. Sat. pm. Walk through Denver Parks to see the trees and flowers.

May 28. Sun. Leave Horticulture House 8 a.m. for trip to Squaw Pass to find the early mountain flowers.

May 30. Leave Horticulture House 8 a.m. for trip to Lamertine Ghost Town above Georgetown. There may be good sub-alpine flowers by this time.

June 4. Sun. Leave Horticulture House 8 a.m. For trip to Eldora and Diamond Lake.

Register 2 days in advance for all trips.

Membership \$3.00 on July 1st

Remember that minimum annual memberships will go to \$3.00 after July 1st. The last half of the year memberships can be taken for \$1.50 which will expire in December, then all will renew for \$3.00 in 1951. Up to July memberships can be taken out at the old rate of \$2.00. Tell your friends and neighbors of this.

Notify Us Promptly of Change in Address

Many Green Thumbs are returned to us each month because members have failed to notify us when they move. This costs us much unnecessary work and expense to locate the new address and remail.

The following story was written by the world famous botanist and nurseryman of Boulder, Colorado in 1934. Notes attached to the manuscript indicated that it was to be the first installment of a series about the lilac. Mrs. Andrews found this among his many papers after his death and kindly offered it to us for publication in the Green Thumb.

LILACS

D. M. ANDREWS

THE lasting popularity of any flower or shrub depends upon its successful use. No shrub has surpassed the lilac in popular favor, nor for a longer period.

The lilac is a native of the opposite hemisphere, but of a latitude and altitude very similar to Colorado. Emile Lemoine, the great French authority and breeder of improved lilacs, says in the introduction of Mrs. Alice Harding's new lilac book, "The lilac is popular throughout the world, but I believe that nowhere is it as beautiful as in the U. S. and Canada. In those countries the contrast between the warm dry summers and the very rigorous winters lends itself wonderfully to the development of the lilac and to the richness of its blooms."

The improvement of the lilac dates back about fifty years. Double flowered lilacs were known before that time and several varieties had been named and distributed; but much of the impetus toward improvement was given by the work of the Lemoines in France, and many of the best varieties were introduced by them. The so-called Hybrid Lilacs, popularly known as French Hybrids, or French Lilacs, does not give exactly the correct impression. Not all improved lilacs are true hybrids, but rather are due to variation and selection within the one species, *Syringa vulgaris*, which in its original form is the common purple lilac. Also, many besides the French have contributed to the improvement of the lilac, in all some 40 growers, several of whom are American.

It is surprising to find how few people are really aware of the changes that have taken place in the lilac as to color, size of flower and panicle, increased profusion of flowering, the precociousness of young bushes which often bloom when only a foot or two in height. The flowering period has been lengthened by early and late varieties, there are splendid doubles and wonderful singles. Perhaps best of all is a ruggedness of constitution that makes them all hardier against frost without reference to earliness or lateness of bloom.

Considering all these advantages and the small differential in cost, one must really deplore the use of the common purple or white lilac where valuable garden space is so limited. For the small garden we must raise our standards of excellence; we must not be satisfied with anything short of the best. Too many of our gardens are overcrowded. Instead of over crowding we must learn the difficult lesson of discarding, digging out, and eliminating the inferior and unfit. This applies, not alone to lilacs, but to every plant and flower that we cultivate. Someone has said truly that our gardens are judged by the things we leave out of them.

The matter of selection of lilacs for the small garden is not so easy as one might suppose. John C. Wister's book on Lilac Culture lists nearly 400 varieties that have been selected, named and brought into cultivation. All of these are beautiful and fragrant, and perhaps no two of them are

exactly alike. Granting that no small garden requires more than a dozen varieties, and many have room for no more than half that number, the competition for place becomes a real problem.

Fortunately, much of the necessary elimination has been made already. Most of the earlier introductions have been superseded by better ones. Improvement is still in progress, and we may look confidently for more improvement in years to come. Unfortunately the average nursery which offers named varieties of lilac is no more up to date in their collection of varieties than many home gardens. Only the specialist will be able to show in bloom the latest creations, and the propagation of sale-size bushes is slower than for many other shrubs. This makes the cost of the newer sorts slightly higher than the prevailing shrub prices, and own-root bushes that are raised from cuttings or layers are sometimes higher priced than grafted plants but they are more valuable.

Looking to the future, and recognizing our lack of parks or arboreta where lilacs are featured, such as the Arnold Arboretum or Highland Park at Rochester, this deficiency should be remedied at the earliest possible moment. Every large community should insist upon the cooperation of park authorities to set aside a sufficient area and plant at least one hundred good varieties of lilac, including the latest and best that are obtainable. Any garden club or association may well be proud to sponsor and promote vigorously such a movement. Washington, D. C., claimed 100,000 visitors the spring of 1934, to see the flowering of their Oriental Cherry trees.

Such a planting affords more than a mere exhibition of beautiful flowers.

Varieties of lilac highly recommended elsewhere do not always appear at their best in Colorado, and vice versa. Personal taste varies so greatly that no two writers or observers would agree upon the best dozen lilacs. The best way to study lilacs is to see them in blossom time with a note book, and compare their flowers and fragrance, their habit of growth and the many characteristics which appeal to one individually. The first choice in color is almost without exception a dark purple. This is probably because of the novelty of the color. This choice, however, applies to at least four out of five persons. What their next selections in color would be I do not know: but on the whole a planting is most attractive and pleasing which contains a predominance of the lighter colors. There is no color clashing, and a few dark ones give emphasis, while many give a gloomy effect.

Buggy Ride for Bugs

By May 26 most gardeners will be frantically wondering how to handle the hordes of creeping, eating, sucking things which begin to appear in such horrid abundance about this time. With this in mind, Horticulture House has arranged with Mr. R. V. Seaman, Field Entomologist for the California Spray Chemical Corp., to explain how best to give these nasty bugs a real "buggy ride" right out of the picture. To get the evening off to a good start, Mr. Seaman will discuss Red Spider, Aphis, Grasshoppers, Flies, and other insects; how to recognize them and what to do about them. And, no doubt, each eager gardener will bring his own pet peeve along for diagnosis and discussion, too. This will be a most informative evening. Time, 7:45; Date, May 26; Place, Evans School.

TUBEROUS BEGONIAS FOR THE AMATEUR

A. C. HACKSTAFF

FOR those of you who will plant Tuberous Begonias the first time this year, I am outlining below some information which may be helpful to you.

From the experience I have had, you cannot produce extraordinary blooms without starting with the finest tubers. Seedlings and the small field-grown tubers will not give one the results to be had with the select variety. Blooms with a diameter of 6" to 8" are possible if you secure the proper stock. Such tubers are available, and worth the higher cost.

Our new tubers were received in Denver about February 15th, and along with last year's were set out on flats slightly filled with peat, placed in a warm room (about 70 degrees) and sprinkled twice a week (hand dipped in water) as one would sprinkle clothes before ironing, until they came to life. One or more sprouts will appear, at which time they are ready for planting in flats, bands or pots. If you are transplanting to beds out of doors, I recommend cardboard bands or cardboard pots; if to be kept indoors, or you prefer to sink the pots in the ground, then you plant in the conventional clay pot.

You can purchase 4"x4"x4" planting bands or 4" cardboard pots, smaller sizes are not as desirable. Prepare flats 4" deep into which the bands or pots fit snugly so that they support one another when filled and moistened (a flat, for example, with an inside diameter of 12"x16" would accommodate 12 bands); otherwise the bands may disintegrate and you lose the purpose intended — transplanting with minimum disturbance

of the delicate root system. The flats should be so constructed that they will not retain water in the bottom. By the use of bands in the flat, plants are easily removed with a wide putty knife or pancake turner after breaking out one side of the flat, when transplanting.

Break out all but the strongest sprout. By leaving only one, there is developed a very strong stalk bearing larger flowers than if several were left.

For the banding or potting mixture, I use:

$\frac{1}{2}$ Peat
 $\frac{1}{4}$ Sandy loam
 $\frac{1}{4}$ Leaf mold

or you can use leaf mold and sandy loam alone. Either of these mixtures will work well.

Partially fill the bands or pots with the above mixture, and then plant the tuber so that the crown is not more than one-half inch under the surface of the soil. Greater depth may cause rotting. Keep the soil one-quarter to one-half inch from top of band for watering.

The soil should be kept uniformly moist, not too wet, and the flats kept in a warm, well lighted spot. Without ample light the plants may become "leggy."

In Denver it is not safe to set the plants outdoors until June 1st to 15th when all danger of frost is over. By this time the growth is sufficient for transplanting.

If you are planting in beds where the best effect is to be obtained, soil should be highly friable. Use generous quantities of humus, such as leaf mold, well rotted manure, sand, etc.

The heavy clay soil, so common in Denver, must be broken up for begonias. Hardening of the soil around the plant is damaging to the root system, the roots being near the surface. If spot planting around the garden, you can prepare a small area for each plant, or sink in clay pots.

You may transplant without removing the bands if you wish. The top of the band should be level with the bed's surface. Be sure that the tips of the leaves are planted forward, otherwise your blooms will be facing the back of the bed. About 18" apart gives a mass effect.

In the bottom half of the planting hole place two heaping tablespoonful of fish or cotton seed meal for large plants, one heaping tablespoonful for small plants. See that this fertilizer does not come into contact with the stem or leaves of the plant as it forms a mold which will destroy the plant. About August 1st an application of finely ground, well rotted cow manure will help late blooms.

Begonia stems are of a brittle, watery nature, and damage easily. They must be well staked or supported. If you live in a hail belt, protection should be provided. I use steel posts over which a frame covered with $\frac{1}{4}$ " Hardware cloth may be set. The posts can be adjusted to any height and removed when danger of hail has passed.

If your plant is damaged or broken, dust the wound with Spergon or charcoal, the former preferred.

Begonias require much moisture, humidity and air. Gentle overhead sprinkling is best. The soil must not be permitted to dry out, but avoid flooding. If your soil is properly prepared, no cultivation is necessary—in fact it should be avoided.

Full shade (North of the house, for example) is undesirable. The plants do best in filtered sunlight in Denver.

Full sun should be avoided except for early and late slanting rays.

In the Autumn, when the foliage begins to turn, gradually withdraw the water. A light freeze is not harmful, but a sudden heavy frost such as we often have in this climate, kills the foliage too quickly, and proper seasoning of the tuber does not take place. I recommend getting them out of the ground before this happens. In lifting, leave as much soil as possible around the tuber. Lay the plants on their sides in the basement until foliage is dried out. Then break out all of the old stem until the healthy tissue of the tuber shows. Leaving stem or particles of stem on the tuber may cause rotting. Wash off all soil, taking care not to bruise the tuber, dry in sunlight for a day or two until thoroughly dry; then store in open flats in a cool, (40 to 50 degrees) dry, preferably darkened place for the winter.

Do not let my verbosity scare you, as it is not difficult to grow Begonias. You do not need the so-called "Green-thumb". You need only to get the best stock and follow directions. You will be well rewarded for the little work involved.





HAWTHORNS

M. WALTER PESMAN

“THE floures be white and sweete smelling, in proportion lyke to the floures of Cherrie trees and Plom-trees”. “It groweth crooked, wrapped, and tangled, with a tronke or stemme of a convenient bigness”. That’s what the Englishman of yore thought of the “Maytree”. And every tourist dutifully admires British hedge-rows and “thorn-apples”.

But our American hawthorns are superior in many ways, besides being much more numerous. They in turn are greatly admired in Europe.

There are six hundred species growing in our Arnold Arboretum in Cambridge, only 220 in Kew Gardens. By

the time hybridizers will get in full swing, the number of desirable hawthorns will be legion.

Many of us are afraid to “tackle” *Crataegus*, the botanical name for Hawthorn. When we do steel ourselves and look over a botanical “key” for determining which is which,—our fear increases to panic.

Listen to this: To start with we have to decide whether the veins in the leaves extend to the “points of the lobes or teeth” only, or whether they extend to points and sinuses both (the latter meaning the recess between the lobes). Being satisfied on that score we are ready to decide whether the

stones of the fruit have furrows or irregular cavities on their inner surfaces (sounds like a dentist's quizz), whether the petioles have little glands at their apex, and whether the leaf veins have a pubescence, "at least when young". After having waited patiently until the fruit has ripened, to find out if it will drop or stay on the tree, we have to decide, next year, how many stamens the blossoms had and whether their anthers were red, pink or yellow.

In the meantime it has become evident that certain names of the past have mysteriously disappeared from modern botanical lore.

There is, for instance, *Crataegus coccinea*, commonly carried in many nursery catalogs, and designated as either Scarletfruited or Thicket Hawthorn. Now different authorities substitute different names for it, claiming that Old Man Linnaeus gave it to at least two different plants. So *Crataegus coccinea* is just out, that's all. (But Sargent's *Silva* of North America still continues the name.)

Far be it from me to blame the botanists for all this. They did their best, knowing full well, that leaf forms are very unstable in general and particularly so in Hawthorns, that even the number of stamens changes in hybridizing, and that sizes of leaves and spines depend on soil, moisture, location, and what not. Even the color of bark differs in different climates.

For a practical nurseryman or plant lover, the best thing to do is to become acquainted with the most common and stable kinds, and develop a sense of recognition from the character of the tree, the comparative size of the haws, the typical kind of leaf.

A good hawthorn to begin on is the *English Haw*, *Crataegus oxyacantha* (the last part simply means sharp-

thorned). Its leaf is distinctively deeply-lobed, with a pair of small leafy appendages at its base (stipules), the thorns are shorter than in other hawthorns, and the fruit is more oblong than in most others. The scrubby, ungainly tree, with a peculiar yellowish bark, is not difficult to tell. Incidentally it does well in shade.



English Haw, Crataegus oxyacantha. Short thorns, deeply lobed leaves, oblong fruit. Ungainly tree with yellowish bark.

There is a "but",—of course; there is in almost any haw. In this case it is a "double" which haunts it: *Crataegus monogyna*. In fact, it is said that the majority of the English Hawthorns in the trade are really the latter—with one nutlet instead of two. But why not leave the worry to the botanist?

Gorgeous varieties of the English Haw are a double-red-blossomed one, called Paul's Scarlet Thorn, and a double white one.

On Speer Boulevard the north bank of Cherry Creek, at Sherman Street, and repeated at various spots up to Pearl, are some typical trees of the *Cockspur Thorn*, *Crataegus crus-galli*, with their horizontal branches, shiny, wedgeshaped leaves, and numerous sharp "cockspur" spines, most of them directed downward. It is a late bloomer and its fruit stays on the tree all winter, much of it still in evidence in February, though shriv-



Cockspur Thorn, *Crataegus crus-galli*. Leathery and shiny foliage, the latest to bloom, most persistent fruit, numerous sharp thorns.

eled and dark. (A cross between it and *C. mexicana* is *C. carrierei*, or *C. lavalleyi*).

Even more horizontal-branching, presenting a definitely flat top, is the Dotted Hawthorn, *Crataegus punctata*. Its leaves are somewhat like that of Cockspur Thorn, but gray-green, broader, with more pronounced teeth,



Dotted Hawthorn, *Crataegus punctata*. Gray-green leaves with strong veins; fruit large, dull, white-speckled; falling early; large flat-topped tree, sometimes spineless.

and particularly strong, deep veins. Its large dull-red fruit (up to an inch in diameter) is white-dotted, (hence the name); it is occasionally yellow. Stout, not too long thorns may be either pronounced or almost absent in individual trees.

The most formidable thorns has Spike Haw, *Crataegus macracantha*; they may be as much as $4\frac{1}{2}$ inches in length; slender, a chestnut brown, and somewhat curved. Leaves are



Spike Haw, *Crataegus macracantha*. Enormous brown spines, up to $4\frac{1}{2}$ inches; fruit small, lustrous, upright, staying on long; small tree.

still wider than these of Dotted Haw, more rounded, with veins also prominent. It is sure to draw attention when displaying its large clusters of pure white, goodsized flowers, and later, in September, when its small but numerous, lustrous crimson berries are held upright. It is but a small tree, seldom over fifteen feet tall. Oh, yes, if you should be botanically minded, it has ten stamens with yellow anthers.

More difficult to recognize by the leaves, I am afraid,—is the Pear Hawthorn, *Crataegus calpodendron*, that used to be called *C. tomentosa*. Yes, its leaves are a bit larger than the preceding species, (three inches long and two inches wide), membranous and pointed at both ends; but its easy recognition is in the small, lustrous, pear-shaped fruit; it keeps these upright fruit clusters long after the leaves are fallen. Neither its tree form nor its medium-sized thorns are particularly distinctive. It does have a brilliant autumn color. Its flowers are



Pear Hawthorn, *Crataegus calpodendron* (tomentosa). Large, thick leaves, sharp pointed; fruit small, 1/2-inch, dull, in ample, upright clusters, remaining on tree, ripening in October. Brilliant fall color. Few spines.

reported as being ill-scented, but that is a question of personal taste, isn't it?

Washington Thorn, on the other hand, *Crataegus phaenopyrum*, has an individuality that one remembers after once meeting it. Its "maiden name", no, I am sure that is not botanically correct, but you know what I mean: it used to be called *C. cordata*, and that gave a good idea about the kind of leaf it has. Cordate, heartshape-like, some people call it triangular, but some leaves are more or less lobed like a maple or a currant. Most of

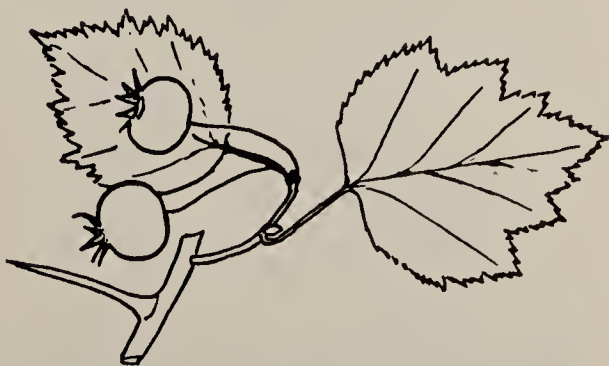


Washington Thorn, *Crataegus phaenopyrum* (cordata). Triangular, lobed, shining-green, thin leaves; late flowering; fruit quite small and bright red, persisting in clusters; many slender spines.

the leaves are not so everlastingly saw-edged as most hawthorns. And like the cockspur thorn the leaf is lustrous dark green on the upper surface. Then, the petioles are long and slender, giving more mobility to the leaf. The fruit also is on long slender stalks, and quite small, barely a quarter of an inch in diameter, bright red, with a neat "nose-end". It stays on all during winter. A young but sturdy specimen is at the west wall of Horticulture House.

In spite of its Washingtonian name the English like it; it is said to be even more extensively grown in the British Isles than in the USA, where it is used for gardens more freely than any other species. Its fall color is most striking. The name? It was introduced from Washington, D. C., into Chester County, and spread from there. That was over a century ago.

Early October is a good time to recognize the *Frosted Haw*, *Crataegus pruinosa*, by its bluish bloom on the ripening pinkish fruit; it makes it look like a sickly pink jack-a-lantern, broader than high, generally but two in a bunch,—on long slender stalks. The leaves, at that time, are just beginning to turn from a bluish green to a bronze, the second color change, (the first change was at unfolding, when the leaves started out with a red



Frosted Haw, *Crataegus pruinosa*. Many stout, straight spines; fruit broad, with bluish sheen; leaves broader than most others.

color). Numerous stout straight thorns make too great intimacy difficult, but close examination of the leaves does show them to be more squatty at the base than most others; they remind one of those of Highbush Cranberry. Two healthy specimens are thriving in the City Nursery.

Morton Arboretum insists this is really the Thicket Hawthorn; it grows as high as twenty feet.

Well, so far so good. We have cagily kept away from the most involved group of hawthorns,—the ones that used to be called *Crataegus mollis* and *C. coccinea*. The difference was said to be easy: *C. coccinea* with half inch fruit, ripening late in October, and ten stamens, as against *C. mollis* with one inch fruit, earlier, and twenty stamens.

Oh, how involved our "garden civilization" has become! Each group has now become a labyrinth of species and varieties, and due to hybridization it is getting worse almost every day. Poor posterity!

For practical purposes we can say that *Downy Hawthorn* is *Crataegus mollis*. But it has numerous near-rel-

atives, such as *C. arnoldiana*, *C. arkansana*, *C. ellwangeriana*, (mentioned in Hough's Handbook of the Trees of the Northern States and Canada), *C. submollis*, and others. In general the Downy Hawthorn group consists of large trees, with a most picturesque tendency to arch down to the ground; it is first to bloom of the hawthorns, first to ripen, has the largest leaves and the largest fruit. What more do you want? Good to eat? yes, even that! And it drops its haws early, conveniently. "Downy" refers to the leaves, especially when young; they have an interesting double-sawtooth edge with four or five sharp lobes. Many of our city parks have good specimens; Cheesman Park has a particularly fine group, and so does Seventh Avenue Parkway.

Shall we lump the rest in despair? A number of them have leaves similar to the one pictured by Sargent as *Crataegus coccinea*. There is the *Thicket Hawthorn*, *C. intricata*, which seems to have inherited its name from the old *C. coccinea*, a ten-foot shrub with smooth leaves, large flowers, long spines, dull fruit in October. *Kansas Hawthorn*, *C. coccinioides* has red foliage on leafing,



Downy Hawthorn, Crataegus mollis. Large softdowny leaves; large early flowers with red disk; large ½-inch fruit, dropping early; Large spreading tree with many different types.



Thicket Hawthorn, Crataegus intricata (coccinea). Twiggy shrub with smooth leaves, somewhat lobed; dull fruit in October; many types.

which turns scarlet again in fall; it has large, shiny fruit with reddish flesh, $\frac{3}{4}$ in., and in many ways looks like the Downy Haw with goodsized flowers, fruit and spines. What about Holmes Hawthorn, *C. holmesiana*? It is mentioned by Hough and illustrated as a handsome tree, again with leaves, flowers and fruit as of *C. coccinea* of yore, in fact Hough says it was included in that group originally. Lately it has been hitched up to *C. villipes*.

By this time you are confused about this "coccinea" group. Cheer up, you're in good company. But since the name *C. coccinea* was dropped altogether, there is now a clearer field.

Some botanists used to consider hawthorns as a toy that was free for all to play with. New species, new grouping, new names, new confusion! Different experts do not even agree on the larger groups. But at least the kinds illustrated herewith are fairly easily recognized. And in this region we are fortunate in one way: we need not bother about another dozen or so kinds that are hardy in the south, but not here.

There is one exception, and that is the *Green Hawthorn*, *Crataegus virides*, which grows along the Mississippi and up into Southern Illinois, but which does seem to be hardy here: it does well in the Denver City Nursery. Dark green shiny leaves, erratically lobed or just saw-toothed, identify it, together with its gray bark and very few spines. It grows into a tall tree and has quite small berries with a "bloom."



There is one more river to cross: our own native haws. Let us, again, start with the easy kinds, two of them.

Willow Hawthorn is *Crataegus saligna*,—just what its name implies: it has leaves like a willow. It grows wild in abundance all along the Gunnison river and in other parts of cen-



Willow Hawthorn, Crataegus saligna. Tall native shrub with flexible branches; both fruit and thorns black; leaves willow-like.

tral Colorado, up to 7,000 feet elevation. You can tell it by its fruit as well: instead of red it is blue-black, $\frac{1}{2}$ in. in diameter. And the slender thorns are black too. It's a tall, clean shrub, good for our gardens.

The other kind that is easy to tell by its morocco-red spines and brown or black, hard fruit, is the *Cerro Hawthorn*, *C. cerronis*. It is a small tree along Colorado and Wyoming streams, with shiny, diamond-shaped leaves and few, purplish stamens. The name *Shiny-leaved Hawthorn*, adopted by Longyear, may help to identify it, but the *Fleshy Haw* also has shiny leaves, though thicker. (*C. erythropoda* is another name for this *Cerro Hawthorn*).

Of the other three haws that Dr. Harrington recognizes in his new *Flora of Colorado*, the *River Haw*, *C. rivularis* or *C. wheeleri*, is restricted to the northwest part of Colorado, another dark-fruited kind; both branchlets and glossy spines are slender.

That leaves two. Now let your tongue be your guide: is the fruit succulent, or hard? In the first case: *Fleshy Hawthorn*, in the hard-fruited case: *Fireberry Hawthorn*. That disposes of some of our worry.

You see, the botanists themselves



Fleshy Hawthorn, Crataegus succulenta.
Tall native shrub with yellowish old bark,
dark green leaves, shiny above; dark red,
tasty fruit; thorny branches.

found that the hairiness of young twigs, color of stamens and length of leafstalk, by which they tried to tell *C. occidentalis*, *coloradensis* and *C. coloradoides* apart, were no safe guides. So now those three are all *C. succulenta*, *Fleshy Haw*.

Well-named too, just taste them, especially when ripe: a treat. The practical gardener can often recognize this common well-branched small tree of the foothills by its distinctive yellowish bark on older twigs, and by its many, long spines. Leaves are dark green, shiny above, with a definitely wedge-shaped base and strong "impressed" veins.

In many ways the *Fireberry Hawthorn* (*Crataegus chrysocarpa*) may resemble the *Fleshy Haw*: numerous spines, shiny leaves, small size of tree, size and color of fruit (which is red, and not golden as the name *chrysocarpa* might indicate). A careful observer might notice that the leaves are almost circular (sometimes called *Round-leaved Thorn*) that it has 5 to 10 stamens instead of 10 to 20 as *Fleshy Haw*, and that the teeth of the leaves have little glands at the ends which may make them glisten in the sun. Once the fruit is in evidence your taste will decide that this cannot possibly be called the *Succulent Haw*.

Here again the botanists have decided that they might just as well throw together such names as *C. doddsii*, *C. sheridana* and *C. rotundifolia* under this *C. chrysocarpa*.

Is that a hopeful sign? Even many botanists realize the "questionable validity of many of the assigned names", and think that some types may be nothing else but accidental crosses in nature. This may not help us to recognize them, but at least it will save our self-respect,—knowing that even the experts are at a loss on the differences between hawthorns.

It is hoped that the pictures and the descriptions will do a little in helping us to recognize at least some of the more common types that grow in this region. They will be used more and more in our gardens as time goes on.



Notice, Cacti Lovers

The Denver Cactus and Succulent Society is a group devoted to the collection, study, and preservation of cacti and succulents, as the name implies. They are admirers of all exotic plants, but since by far the largest number of plant oddities are found within the classification of succulents, this title is adequate to cover the major interests of the members.

Europeans have long admired and studied cacti, which were taken to the Old World by early explorers. But only comparatively recently have our own people come to appreciate them. However, once started, interest has spread rapidly, leading to the formation of the Cactus and Succulent Society of America in 1929.

It is reliably estimated that there are now about 30,000 collections in the United States. These vary in size from one or two window plants to sizable greenhouse displays. The Denver Society is no exception to this variation in number of plants, so any

one even mildly interested in "stickies" will feel at home in the group.

Meetings are held on the last Friday of each month, often in the members' homes so the collections may be studied and enjoyed. But the May and June meetings will be at Horticulture House, 1355 Bannock. All interested persons are cordially invited to attend these meetings.

Usually, some particular genus or species is studied each time, but there is ample opportunity, also, for "plant gossip." During the spring and summer, field trips are taken, as the Society is actively interested in further promoting appreciation of our native cacti, of which Colorado has 26 spe-

cies. A program of preservation is also important, because the constant encroachments of civilization upon their native haunts threaten the extinction of some species.

Denver and Colorado are in the spot-light just now with all cactus and succulent lovers because the 4th Biennial National Convention is to be held here July 10, 11, and 12th, 1951. The local host group is busy developing plans for fun, study, and field trips for this big event.

Remember the meetings on May 26th and June 30th, 8:00 P.M. at Horticulture House. YOU'RE WELCOME!

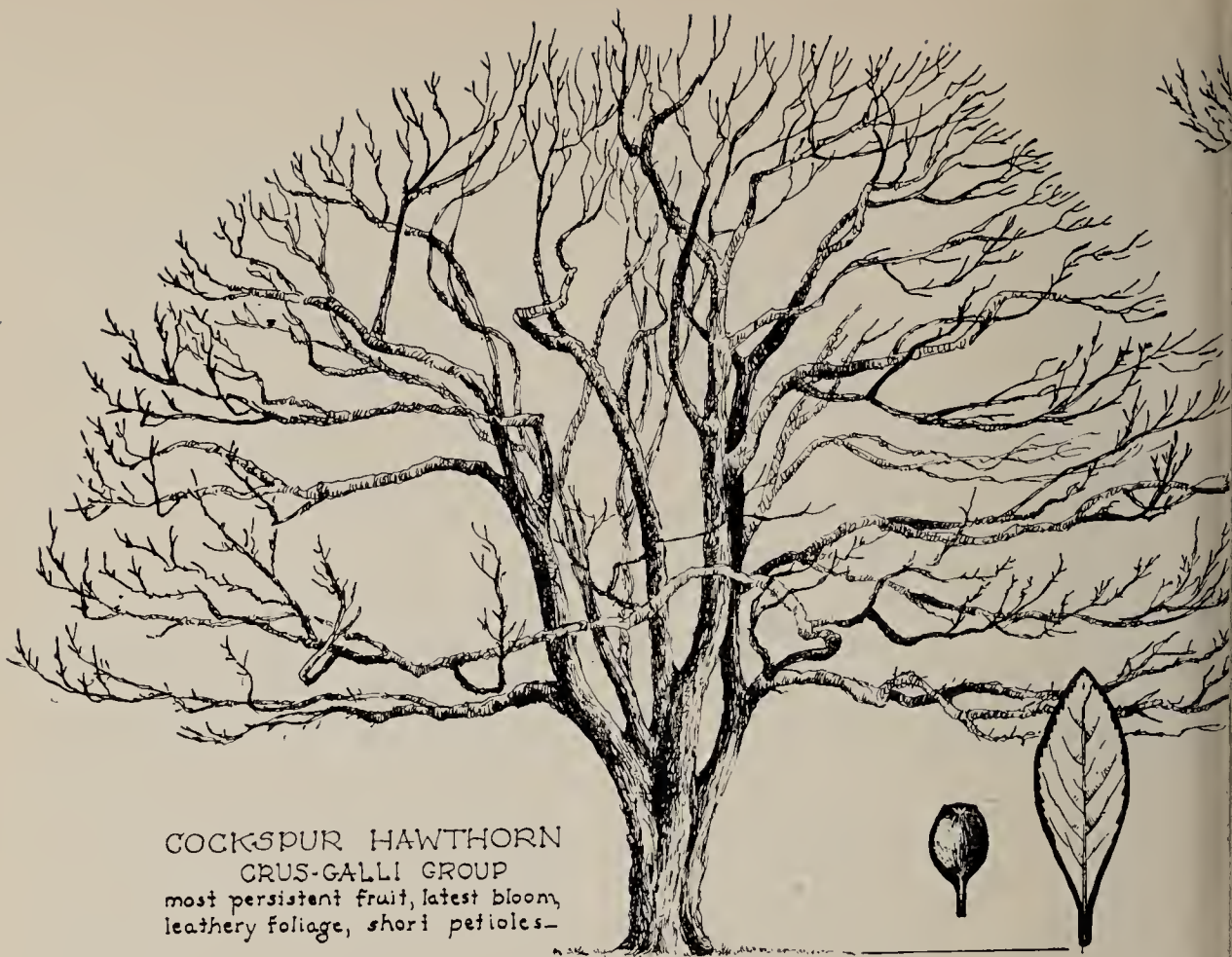
CEDAR HAWTHORN RUST

DENVER FORESTRY OFFICE

Cedar Hawthorn rust is a fungus disease attacking both Junipers and Hawthorn or Apples. Control of the disease can be obtained by removing the least valuable tree of the alternate hosts, for the disease must alternate between the two hosts to complete its life cycle. Future plantings should use resistant varieties of Junipers and Hawthorn. If it is not practical to remove one of the alternate hosts the following spray schedule is recommended.

<i>Approximate Date</i>	<i>Stage in life cycle</i>	<i>Control Recommendations</i>
April 20 to June 1st.	Spores produced from galls on the Juniper are infesting the Hawthorn or Apple leaves.	1. Spray Juniper with Bordeaux 180 prior to April 20th. (Caution Bordeaux and Lime-sulfur not compatible.) 2. Spray Hawthorn or Apple, 3-5 times between April 20th and June 1st. Fermate 1½ lb. to 100 gal.
July 15 to October 1st.	Spores produced on the Hawthorn or Apple are infesting the Junipers.	Spray the Juniper with Fermate 1½ lb. to 100 gal. water. A 3 week intervals starting about July 15. 3 Applications will not give complete control, but will reduce the major portion of the infestation.

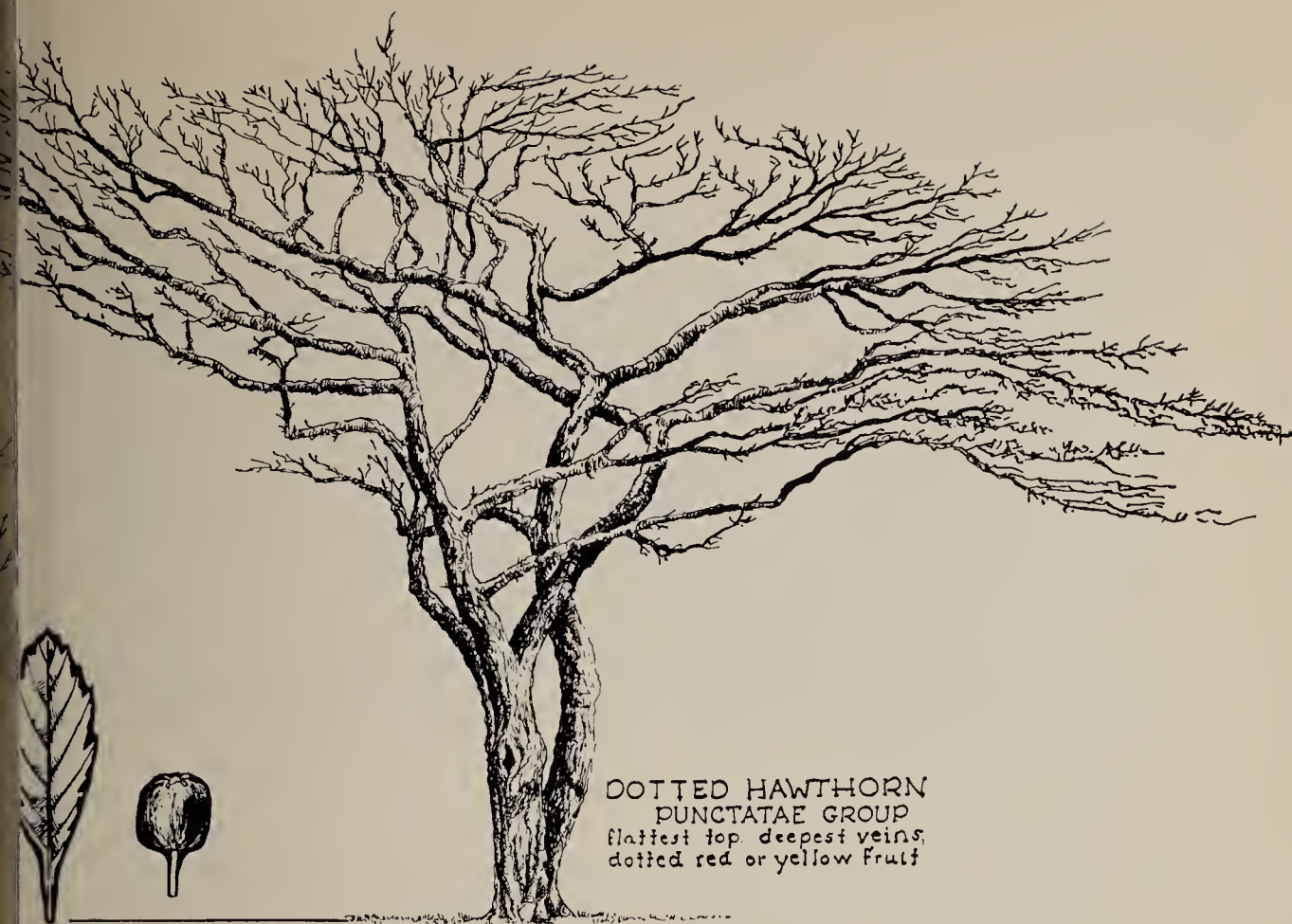
The rust has a two year cycle on the Junipers, that is, Junipers infected in July 1950 will not show the jelly-like galls until the spring of 1952. Junipers sprayed with Fermate this summer may still have jelly-like galls next spring and will not be free until the following spring.



COCKSPUR HAWTHORN
CRUS-GALLI GROUP
most persistent fruit, latest bloom,
leathery foliage, short petioles—



DOWNY HAWTHORN
MOLLES GROUP
largest leaves, first to bloom,
first fruit to ripen, largest fruit



DOTTED HAWTHORN
PUNCTATAE GROUP
flattest top, deepest veins,
dotted red or yellow fruit



THICKET HAWTHORN.
PRUINOSAE GROUP
thin small leaves, bronze when
unfolding, twiggy growth—

Loaned by Morton Arboretum. Drawings
of hawthorn tree types by Mrs. Raymond
Watts.

LANDSCAPE ADORNMENT

W. R. LESLIE

PEOPLE are ever very sensitive to their surroundings. As a cheery smile uplifts and a dour frown depresses, so do the component parts of the home grounds influence by either exhilarating or dulling the beholder according to their visual virtues. With the acquisition of a growing stream of new trees, shrubs, vines and herbaceous plants it is increasingly practical to plant the grounds so that a keen maintained interest is assured during autumn and winter as well as in springtime and summer.

The spring pageant of blossoms is more opulent than it has been due to the introduction of such showy new

hardy small trees as the Rosybloom crabapples, and superior shrubs such as hybrid lilacs, roses, honeysuckles, mockoranges and diervillas.

Summer is more colorful now with the addition of trees and shrubs possessing intensely colored foliage and superior herbaceous perennials as exemplified in choicer lupines, lythiums, lilies and delphiniums.

Autumn sees Nature painting the woodlands and borders with bold and varied colors. When the chlorophyll fades from leaves and the reds, yellows and purples assert their will the landscape reaches the season's zenith of buoyant glory. This period, which has been called "Nature's short-lived madness", has been made more lively than previously with the planting of recently imported plants from the Orient and also local hybrids.

Winter is commonly considered as the drear season. The majority of indigenous trees and shrubs unload their foliage in early autumn, lose their fruits before freeze-up and then for five months exhibit only uninteresting bark, twigs and buds of neutral or insipid colors. Tame browns, pale drabs and dull grays are dominant. Happily, such indifferent surroundings may be readily brightened and the scene filled with definite interest. This transformation is effected by incorporating masses of woody ornamentals which remain clothed in brightly hued bark or carrying showy ornamental fruits. Some of the Rosybloom crabapples combine colorful bark and a crop of persistent scarlet fruits throughout the dormant season. A considerable range of subjects retain their fruits until spring. Among such are Cherry prinsepia, hawthorns, roses, buffaloberries, seabuckthorn,

One of the lilies developed at the Morden experimental grounds.





Hedge trials at the Morden Experimental Grounds, Manitoba, Canada

buckthorns, cotoneasters, Russian-olives, snowberries and bittersweet. Distinctive arresting bark is noted on select dogwoods, willows, birches, Amur cherry, Swedish basswood, and other subjects which enrich the winter scene.

Brief comment follows on some of the hardy distinctive plants esteemed in Southern Manitoba as contributing beauty and individuality to parkland and home-grounds landscapes.

Redfruited Elderberry.





Rosybloom crabapple at Morden.

NEW VARIETIES

(Names after "Standardized Plant Names" 1942)

Rosybloom (Redvein) Crabapples

- Almey*—vigorous tree, annual bearer, large bright red flowers with white star at base of petals; small scarlet fruit clings until spring.
- Sundog*—upright tree, mauvy-pink large flowers, small fruits fall in autumn.
- Strathmore*—columnar small tree with willowy branches; leaves carry red-purplish color all summer; flowers darker than Hopa.
- Baskatong*—an Ottawa variety with red leaves.
- Tomiko*—a sister of Baskatong, and somewhat superior.
- V. C. No. 3*—coppery leaves, a substitute for copper beech.
- Oakes*—deep purplish red leaves.
- Preston Hybrid Lilacs* (late season)
- Coral*—clear pink.
- Freedom*—mauve-pinkish flowers in profusion.

Nocturne—smoky, retaining character while aging.

Royalty—rich purple.

Redwine—vinous, paling with age, long-blooming.

Hiawatha—reddish.

Bellicent—clear pink.

Fountain—pink, drooping trusses.

Amur Lilac—20-foot tree, late creamy blossoms, tawny seed pods in winter. Suitable tree for small properties.

Amur Chokecherry—40-foot shade tree, tawny-yellowish papery bark, healthy, supplies winter color.

Morden Elm—a strong shapely fast-growing selection of the native.

Siberian Elm, Manchurian strain—similar to what has been sold on the Plains as "Chinese elm" but is fully hardy.

Morden Spruce—a select Colorado with dense habit, straight growth and durable waxy bloom on the leaves.

Schubert Chokecherry—from Dr. W. F. Wills, Bismarck, North Dakota — displays purplish large foliage from late June until leaf-fall in late October.

Toba Hawthorn (Pauls Scarlet Thorn x *Crataegus succulenta*)—a vigorous small tree with persistent double pink flowers and scarlet fruit into winter.

Manito Pembina (or American cranberry-bush)—a tall form with very large fruits.

Tidy Caragana—a ferny-leaved selection of Littleleaf Caragana. Foliage more durable than Lorberg.

Red Amur Tamarisk—sparkling red bloom until autumn.

Golden Buffaloberry—shiny bright golden yellow winter berries.

Prairie Almond—semi-double pink flowers with red eye, borne in abundance, followed by woolly red fruits until September.

Silvia Mockorange—a hybrid with sweetly fragrant, long-lasting double white flowers borne on a shapely bush of moderate vigor and tawny branches.

Swedish Basswood—a small tree of the Littleleaf Linden or basswood, distinguished by warm tawny winter bark.

Carleton Honeysuckle—very fiery deep red flowers; bush denser than Zabeli.

Valencia Honeysuckle—golden berries.

Amur Honeysuckle—fragrant white flowers and persistent red fruits arranged in layers.

Mongolian Oak—neat foliage that turns rich red in autumn and often clings to twigs throughout the winter.

Willows: Redstem White Willow (*Salix alba chemesina*)—liveliest red twig bark of all subjects on test.

Daphne Willow (*S. daphnoides*)—bloomy bark; large carmine catkins; useful for forcing for late winter bouquets.

Manchurian Crabapple—upright healthy tree, covered heavily with red currant-like fruits until spring.

Manchu Walnut—hardiest, most rapid-growing walnut trees, large leaves.

Showy Mountainash—large bright scarlet fruits.

Seabuckthorn or Russian Sandthorn—plentiful golden fruits until April.

Cherry Prinsepia—thorny, arching shrub, earliest to leaf out, early yellow flowers, red fruits until May.

Hedge Prinsepia—thick glossy foliage on branches armed with long sharp thorns.

Altai Rose bush at Morden.



Goldenplume European Red Elder—clearer golden foliage than the Common Golden Elder.

Roses: Betty Bland—a semi-double pink bush rose; canes as bright as Redosier dogwood in winter.

Prairie Sailor—a bush rose, single flowers, golden margined pink.

Prairie Wren and Prairie Youth—two bush roses with attractive double pink flowers.

Turkestan rose (Rosa laxa)—a tall bush to 8 feet, having fragrant white flowers, succeeded by large red hips which are attractive to winter birds.

Altai rose—a tall bush rose from Siberia, the 3-inch single pale yellow blooms give purplish hips which cling until May.

Manchurian Pink Weigelia—a very hardy shrub bearing flowers of Eva Rathke type.

Farrer Potentilla—dainty bush producing bright golden flowers into late September.

Threelobe Spirea—favorite early white spirea.

Canby Pachistima—a broadleaf evergreen, fully hardy, useful under low windows, in rock gardens, and as ground cover.

Korean Boxwood—a dwarf bush box which is hardy.

Herbaceous Perennials:

Russell Lupines—large spikes of beautiful pastel shades—whitish, cream, pink, reds to purple.

Morden Pink Lythrum—an arresting pink tall clump from June until September; useful for bouquets. Unusually long season of continuous bloom—tending not to set seed.

Caucasian Scabious—long season of artistic flowers.

Rosyveil Gypsophilla—mauve rose flowers June to October.

Lilies are legion. Many aristocratic new varieties are appearing. Two favorites among the old-timers remain unsurpassed in their season—Caucasian (*Lilium monadelphum*) with bright yellow flowers in June; and Hundred-leaf (*L. centifolium*) crowned with very large white fragrant flowers on 5-foot stems in mid-summer.

Other cherished residents of the herbaceous borders include Autumn Asters and Garden Chrysanthemums. Splendid introductions are being contributed by many plant breeders.

SPRING GARDEN FAIR POSTPONED

The Garden Fair committee wishes to thank all who expressed a willingness to join with the Association to promote beauty and improvement in Denver through the spring garden fair.

In March the Association was given permission to use the Civic Center for this event. As interest and participation in the fair grew, it became apparent to the city administration that use of the Civic Center for a commercial purpose would establish a precedent that would be difficult to control. As citizens particularly devoted to the preservation of a beautiful city, we regretfully but sympathetically support the administration's decision.

The Courthouse Square Corporation then offered the Association the use of Courthouse Square for Sunday, May 21st. Because the purpose of such a fair is not only to exhibit fine material, but to sell it, we feel that presenting the garden fair on Sunday cannot be reconciled with the policy of many contributors not to sell on that day.

Plans are now being made for presenting the Denver Garden Fair in the spring of 1951, when the Auditorium Annex will be completed and we can offer protection from weather as well as a longer display period. Definite announcements will be made later.

In the mean time there will be an auction of antiques, plants and various donated material in the parking lot behind Horticulture House on May 20. See further details on back cover. Bring in your discarded things and come prepared to buy things that you need.

ROSES ARE WAKING FROM WINTER SLEEP; SPRING CARE IS IMPORTANT FOR HEALTHY PLANTS

WARM spring days are close at hand and rose gardeners in the northern states should make ready to uncover their plants and prepare them for the growing season. If the proper measures to protect the plants from severe winter weather have been taken, spring chores will be relatively simple and will assure the grower of an endless array of beautiful flowers throughout summer and fall.

Hybrid teas and floribundas may be uncovered when there is no longer danger of a severe freeze. Some gardeners advocate the gradual removal of protective soil mounds but this must be done with extreme care to avoid injury to early growth. Perhaps the safest method is to wash the soil from around the plants, using a gentle spray, not the full force of water from a hose.

This is also the time to uncover climbers and tree roses which have been laid down for the winter. Give your tree roses the added support of a stake or pole to prevent "whipping" by the strong winds that are usually common to this season of the year. Secure climbers to their supports with strips of cloth, not string which may cut or damage the canes. There are a number of commercial fasteners available which can be obtained from leading nurserymen.

When winter protection has been removed, bush-type roses including hybrid teas and floribundas should be carefully pruned. The main objectives of pruning are to remove dead or injured wood and to shape the plants. Major pruning rules to remember are: eliminate wood that has been injured during the winter, cutting back to healthy tissue, but do not take out

any more green wood than is necessary; remove spindly, undernourished stems for they will never attain full, healthy growth; make each cut about one quarter of an inch above a bud that points outward so that the plant will spread; shape the plant as you prune. Dead wood can be identified by its dark brown color as opposed to the healthy greenish live wood.

The question of the best pruning height has long been a bone of contention even among the most experienced growers. For general garden purposes, however, hybrid teas such as Mission Bells, Capistrano and Sutter's Gold, All-American Rose Selections for 1950, should not be cut back too severely. Remember that the plant needs plenty of strong green wood to store reserve food which will nourish new growth. The same rules hold true for floribundas such as Fashion, another 1950 A.A.R.S. winner.

Large flowered climbers are not pruned until the close of the blooming season but wood injured during the winter can be trimmed in the spring. When the time for pruning climbers does come, all damaged or weak canes should be cut out for these plants produce their best flowers on second year or older wood.

Ramblers are also pruned at the end of the blooming period but the method is different from that used on climbers. All shoots that have flowered should be cut back almost to ground level for this class produces a new set of canes each year.

Always burn pruned wood to eliminate the possibility of infection from diseases or insects it may harbor.

From All-American Rose Selections, Public Information Office.



Species tulip types, kaufmanniana, clusiana, cornuta stenopetala and eichleri.

THE SPECIES TULIPS ARE DIFFERENT

L. J. HOLLAND

May is the month that brings us the Darwin, Cottage and Breeder strains of Tulips in all their glory. These three hybrid varieties are perhaps the most widely grown of all bulbs, being at home beside the humble cottage or on the palatial estate. Famed in prose and poetry, they are well known to all.

But what of the Wild, or Species, Tulips? Alas, they are but little known except by botanists and a few gardeners that like to have "something different," yet there isn't a single one of them that isn't worthy of a spot in your garden. Every one a gem of loveliness.

For the most part the Botanical (or Species) Tulips are low growing, and do best in a warm, sunny location, making them an ideal subject for rock gardens. Also, most species will have bloomed and faded by the time the other rockery plants have started growing, thus adding to their value in such locations. I find that they have the best effect when grown in clumps of half dozen each, where they may be left undisturbed for several years. Their culture is simple, one can almost plant them and forget

them, but they must not be planted as deeply as the Darwins—about four to six inches—and they prefer a soil that is not too rich.

Since there is such a wide variation in the size, shape and color of both the flowers and foliage, I shall not classify them according to botanical order, but list alphabetically those with which I'm familiar.

Tulipa acuminata: This has long, sharp-pointed petals, yellow, streaked with carmine, petals often four inches long. Grows about a foot high. Probably from Turkey; very rare.

T. australis: One of the few Tulips with nodding flowers. The flowers are yellow, with a reddish flush on the outside, the leaves are very narrow. Only about 8 to 10 inches tall. From the Iberian Peninsula.

T. clusiana: Known as the Lady, or Candy-Stick Tulip, this little lovely one has creamy-white flowers that have a blue blotch at the base. The outside of the petals are red. About a foot high. From the northern shores of the Mediterranean.

T. dasystemon: From the strictest botanical standpoint, this is not a true Tulip, but an *Orithya*, but let the

botanists fret about that. Some describe it as a white flower with a yellow center, I like to think of it as a yellow flower with white tipped petals. Only about 6 inches high; a beauty from Turkestan.

T. eichleri: Orange-red blossoms that have a dark basal blotch with a yellow margin. About 8 inches high. From near the Caspian Sea.

T. fosteriana: If you like "any color, just so it's red" you'll like this. As red as an Oriental Poppy and over a foot tall. The second Tulip to bloom for me. The variety "Red Emperor" is probably the largest flowered Tulip. Petals have black base bordered yellow. About 18" tall. The variety "Princeps" is not quite so large or tall. A comparatively recent introduction from Bokhara.

T. kaufmanniana: Called the Waterlily Tulip because of its resemblance to the flower of a *Nymphaea*. Earliest of all Tulips, usually about the last week in March for me. White with yellow center, petals red outside. Only about 6" tall. The variety *Aurea* is the one commonly grown. Native to Turkestan.

T. praestans: Usually two or more orange-scarlet flowers from each bulb. About 8" tall, it follows Red Emperor in bloom. From Bokhara.

T. viridiflora: Different, but not exciting. Large greenish-yellow flowers on a tall (about 18 inches) stem. Somewhat resembles a Parrot Tulip. Country of origin not known. Formerly called "The Green Knight."

Try planting a few of these next fall. You'll never regret it.

Fort Collins, The Lilac City of Colorado

BY MRS. BERTHA PETERSON

An idea born in the Fort Collins Garden Club and quickly transferred

to the Morning Garden Club has led to their combined efforts to make of this town the Lilac City of the Rocky Mountain Empire.

Receiving the approval of the town board on January 26, and shortly after that of the State Highway officials, the idea has snowballed into an activity which is now being supported by most of the influential clubs of the town. Nurseries in the vicinity are assisting by furnishing stock at advantageous prices. Gifts from approving citizens has begun.

Mrs. John S. Congdon, in memory of her deceased husband, has donated 42 clumps of the finest varieties of hybrid lilacs. These shrubs, with appropriate markers, will be placed at the north and south entrances of the city. Eventually plantings will be made at each entrance of the city and on available parkways, using only such hybrids as will justify the expense and the labor of planting.

The city has promised to do the planting which will be carried out under the direction of Howard Evans, City Engineer. The city will also furnish and deliver water to the shrubs. Among others who have volunteered to assist with the planting are the Girl Scouts and the Boy Scouts.

Mrs. Ruth Montgomery, president of the Fort Collins Garden Club; her committee chairman, Mrs. H. G. Jordan; Mrs. B. B. Mishke, president of the Morning Garden Club; and her committee chairman, Mrs. Charles Reimer, have completed so much of the work of bringing an idea into creation that the result seems certain. Fort Collins WILL become the Lilac City of the Rocky Mountain Empire.

Fort Collins is setting a good example for other communities to follow.—Ed.

Extract from a talk given at the Inter-American Conference on Conservation of Renewable Natural Resources, held in Denver Sept. 7-20, 1948.

THE VALUE OF WILDERNESS

BY SIGURD R. OLSON

Wilderness Ecologist, Izaak Walton League of America, Chicago, Illinois

THE conception of wilderness has changed. A generation or two ago, it was a threat to our existence. Now with most of continental United States developed, we see it in the light of something we can at last enjoy, as an opportunity for education and scientific study, too often as a final chance for exploitation.

One of the greatest hindrances to the conservation of wild areas is the prevalence of the old pioneer tradition that no place should remain inaccessible or undeveloped. This outmoded philosophy is directly responsible for many of the battles waged over our last frontiers.

Fortunately there is a growing appreciation of the real values of wilderness. The great development of recreational use has stimulated interest everywhere. Communities depending on such areas for a livelihood are becoming aware of what they mean to their own economy.

From an educational standpoint, wilderness regions can be considered as living pages of history that give us as understanding of our past. To the youth of American they are a priceless opportunity for there they catch the vision which prompted man to fight his way across the continent.

Undisturbed control areas are indispensable to scientific research. Without norms, it is impossible to arrive at sound conclusions regarding ecological problems. Due to the rapidly changing biotic pattern of America, wilderness areas will soon be the

only places where controls can still be found.

Not only are such regions valuable as sources of recreational income, but they are the last reserves of unexploited resources on the continent. They become, therefore, important links in our economy.

A serious flaw in our system of wilderness regions is the existence within their boundaries of privately owned lands. This condition coupled with the advent of flying into remote areas, makes swift acquisition and control imperative.

All conservationists have a responsibility to safeguard what is left. This can best be done through education which stresses the importance of wilderness to national welfare. If we protect and coordinate our policies of zoning, it will still be possible to set up a system of wilderness areas in the western hemisphere that will be a model to the rest of the world.

The Romance of Drug Plants

May 5 is the date to hear Miss Mary McDaniel tell of the romance of drug plants. At present, Miss McDaniel is hard at work comparing the properties of native Colorado drug plants with those of the standard varieties imported from Europe, and she has done some delving into the odd and interesting facts and fancies which cluster about these fascinating plants. From this material she has prepared a delightful story which she will bring to Horticulture House at the usual time, 7:45 P.M., May 5.

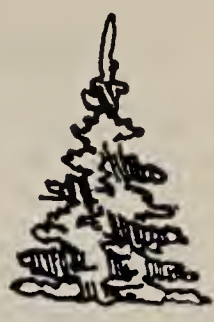
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GARDEN SHOP

Mrs. L. B. Shelby, Manager

Questions and Answers

Must all soil have air to grow plants? Mary Anderson, Denver.

Exposure of soil to the air is very important in the cultivation of plants in general, especially in regard to the growing of vegetables and plants growing in pots. Admitting air to the soil increases its fertility and often helps to turn a poor soil into a productive one. Those stiff, wet, clay soils we find so often in the Denver area cannot admit air freely unless due aeration is practiced. These heavy soils are much improved if they are dug in the autumn or fall and allowed to remain until spring in rough lumps or ridges. A good tilth will be insured by pulverizing in the spring and breaking up soil into small particles. Of course regular hoeing throughout the growing season is most beneficial.

ROSES

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Books Received at the Library During the Month of April

Carnations for Amateurs—J. L. Gibson. Covent Gardens, London.

Green Thumb, bound volumes, containing the 12 issues for the year 1949.

Horticultural Color Chart—the finest in publication.

Landmarks of Botanical History—Edward Lee Greene.

Standard Plant Names—Am. Joint Committee of Horticultural nomenclature.

Making a Garden of Perennials—W. C. Egan.

The Gardener's Bug Book, Cynthia Westcott, 2 copies in Library.

Myths and Legends of Flowers, Trees, Fruits, and Plants—Charles M. Skinner.

Donors to the Library for the Month of April

Mrs. B. C. Essig
Mrs. L. P. Bansbach, Jr.
Mrs. John Tippitt
Mr. George F. Ott
Mrs. Julius Berbert
Lynnette Heminway Emery
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The Legend of All Countries and All Ages in Myths and Legends of Flowers, Trees, Fruits and Plants

BY CHARLES M. SKINNER

I DO not know what else Charles Skinner has written but in his book of Myths and Legends he has tracked down narratives of curious interest not only in themselves but also in their association from about every imaginable species of flower, tree, fruit and plant. Do you know the Algonquin story of the love of the south wind for the Dandelion, of the white weed detested by farmers but beautiful in their fields in June—have you heard why the color of the olive leaves is pale? These and many other legends are told in this charming book. You who have been brought up under the kindly influence of old china will find the legend of the willow on your tea service. I doubt if there is one who can read the full story on the plate; it is there, however, and told in detail in this fetching volume. There are christian legends, like those of the "Madonna Lily" that burst into bloom on the first Easter dawn or the little star of Bethelhem of which Mary said, "see the star in the east has fallen and born fruit in kind." There is special fascination in the myths of the deadly nightshade, "bred of witchcraft and evil to man", in Solomon drinking the hemlock and Jesus on the rood. I did not run on to Brett Young's Prothalamion,

The garden of black hellebore and
rosemary
where wild woodruff spills in
a milky pool,

There is heaven.

Maybe you will like your garden better if you read these captivating tales.

HELEN FOWLER

A word about Richardson Wright's Four books in the Library:

The Gardener's Bed Book—

Here the author sets down suggestions and sentiments gathered from his own experience. "Pungent as the night breeze" come these short and long chapters to be read in bed, by those who love the green, growing things of earth.

Another Gardener's Bed Book

One story for every day in the year; they include sound advice on growing plants, book quotations, anecdotes, recipes and essays on a host of subjects.

The Winter Diversions of a Gardener—

A series of papers, as he says, written for his own amusement. When Mr. Wright cannot actually get out in his garden, he studies garden history. "Like a busy cook," he writes, "with many pots upon her stove, some I push to the back of my mind to simmer, some drag forward to boil merrily."

From that mental cookery, extending over a number of years, these papers have derived.

Truly Rural

This is an early book of the author's, long out of print. I find there is a new edition, however, with five illustrations in color. Here are fascinating thoughts of life in the country, told in the same delightful way that makes Richardson Wright so eternally entertaining.

H. F.

An additional attraction at the garden auction will be an exhibition of garden sculpture especially designed for this occasion by the sculpture department of Denver University's Art School.



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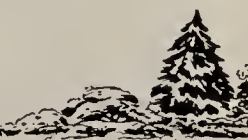
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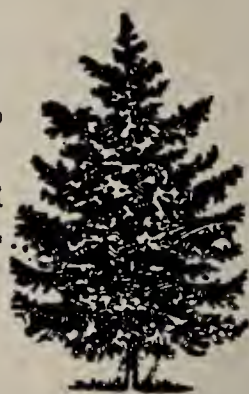
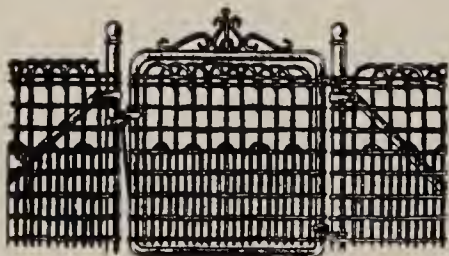
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MAY GARDENING

PLANTING—The transplanting of trees, shrubs and evergreens should usually be completed by the middle of the month, as this is the time when the leaves are beginning to unfold. Many perennials can still be safely moved if taken up with a shovel of soil. The tender annuals are usually left until about Decoration day, to avoid those late freezes. The tendency of some nursery firms is to provide more and more things in pots which can be set out at any time. We may some day come to the California practice of listing the size of plants, not by feet, but by gallons. (The size of can that they are planted in.)

PRUNING—Almost any necessary pruning can still be done with the exception of maples or shrubs that are soon to bloom. Learn how to make cuts so that the scars will heal quickly.

SPRAYING—Keep a close watch now for the first signs of insect damage. The sucking insects—aphids—are most likely to appear at any time after the weather warms up. Watch your spirea, juniper trees and spruce especially. An ounce of prevention here may save a lot of damage.

FERTILIZING—Plants that are not growing vigorously may now be given a little stimulation, remembering that many of the chemical fertilizers are quick acting and of short benefit while the organic fertilizers are slower but longer lasting.

WATERING—Unless natural rainfall has been more than usual, it is time to begin to check all plants for sign of drought and give them enough to reach to their farthest roots. Remember that the larger the plant the larger the roots and water so that the soil is wet down where the roots are growing. Generally it is a good rule to water thoroughly and not so often.

CULTIVATION—This is the start of the summer's war on weeds. Cultivate no deeper than is necessary to destroy them. The weeds are much easier killed soon after they come than they are after they become established. Mulching with leaves, grass clippings, peat or sawdust is taking the place of cultivation in many places.

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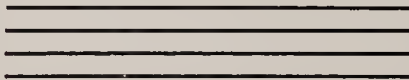
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June, 1950

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The Green Thumb

COLORADO'S GARDEN MAGAZINE



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The Green Thumb

Vol. 7

JUNE, 1950

No. 5

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Painting on cover and most of the drawings on page 16 are by Phil Hayward, commercial artist with the Rippey Advertising Agency. We appreciate these contributions by Mr. Hayward very much.

GEORGE W. KELLY, Editor

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Take Good Care of Your Babies

We are referring here to your baby plants—the ones that you set out this spring. You carefully planned just the right thing for each place, you found a good reliable nurseryman (probably a member of the Colorado Nurseryman's Assn.) who sold you plants with well shaped, vigorous tops and roots that had never been dried out by bad handling or neglect. You planted these carefully, in good soil and in holes that had been carefully dug. You watered them in thoroughly and cut them back as necessary.

Your little prospective shade trees, perennials, shrubs, fruit trees and evergreens still look quite dormant, but you have high hopes for the effects that you have dreamed of from these things. Don't consider that your job is done now, however well it has been taken care of up to this point.

One of the most common causes of the failure of newly transplanted stock is improper watering. The soil around plants should be kept moist, but not soggy wet, clear down to the farthest roots. A little sprinkling on the surface every few days does not do this. WATER THOROUGHLY EACH TIME but only frequently enough to keep the soil moist. Most plants require some air in the soil as well as water. The only sure way to tell whether plants have sufficient water or not is to dig in a ways occasionally and see. Don't be too much influenced by the condition of the SURFACE of the soil.

Watch for the first sign of insect attacks on these little defenseless plants and spray or dust at once. Don't let the surface of the soil become packed. Cut out competing weeds before they damage the plants. Mulching may help. New plants seldom need fertilizer—just good loose soil. Some of the finer plants will appreciate a little shade for the first few months. Tall plants may need some bracing. Tiny things may need some protection from thoughtless children and dogs.

You have a big investment in these baby plants already. Protect this investment by giving them the best care possible. If you do not know what they need ask your nurseryman or your neighbor with the green thumb.

COLORADO NURSERYMEN'S ASSOCIATION

See the February issue of the Green Thumb for list of members.



Colorado Forestry and Horticulture Association

Organized in 1884

"To preserve the natural beauty of Colorado; to protect the forests; to encourage proper maintenance and additional planting of trees, shrubs and gardens; to make available correct information regarding forestry, horticultural practices and plants best suited to the climate; and to coordinate the knowledge and experience of foresters, horticulturists and gardeners for their mutual benefit."

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 Secretary.....Mrs. A. L. Barbour
 Treasurer.....Richard R. Osborne

JUNE SCHEDULE

June 2. Fri. 7:45 P.M. Horticulture House. The Land of the Incas, Kodachromes by John T. Roberts. See notice on page 29.

June 4. Sun. Flower trip to Eldora and Diamond Lakes. Leave H. H. 8 A.M.

June 8. Thurs. 8 P.M. Horticulture House. Rose Society. All rose lovers invited.

June 11. Sun. Apex and American City Ghost Towns. Alpine forget-me-nots. Call for particulars.

June 16. Fri. 7:45 P.M. Horticulture House. Flower Arranging, with garden flowers, especially roses, by Al Ryan.

June 18. Sun. Rose Show by the Denver Rose Society, at the Ford Showrooms, 2650 E. 40th.

June 18. Sun. Tree Planting, sponsored by the Colorado Mountain Club and the U. S. Forest Service. Leave public library 7 P.M. Jane Silverstein, leader. Phone for particulars.

June 23. Fri. 7:45 P.M. Horticulture House. All about Roses, by Maurice Marshall.

June 24-25, Sat. & Sun. James Peak from Berthoud Pass and Alice. Call for particulars.

June 30. 8 P.M. Horticulture House. Denver Cactus and Succulent Society.

July 1-4. Sat. through Tues. Sheep-

horn Ranch, exploration and botany trip. Call TA 3410 or PE5565 for particulars of any trips.

Registrations for trips must be made at least two days in advance.

Roses, Roses, Roses

Denver can grow roses as nice as those of the Northwest, or any other section of the country. So says Mr. Maurice Marshall of the Marshall Nurseries, and he proposes to prove it on Friday evening, June 23, at Horticulture House. The rose show will be just past, and everyone will be wanting to know how those lovely specimens and displays were achieved, and how the ordinary gardener can do the same. So make a date with Horticulture House for 7:45 that evening, and learn the why and wherefore, and howto, of roses.

Tree Planting June 18

You have enjoyed the forests and wildlife of the mountains for many years. Here is a chance for you to show your appreciation and DO something to help make the mountains pleasant. The Colorado Mountain Club's annual tree planting day will be June 18. Workers will leave the public library 7 A.M. by bus and private car. Bring a strong back and willing hands. Tools will be furnished by the Forest Service. Call the Mountain Club office, TA 0677, or the leader, Jane Silverstein, FR 4812.



What is more beautiful than a tree that has grown naturally, that is healthy and vigorous, with no scars from the abuse of man? This tree asks only a good soil, sufficient water and to be left alone. The following pages telling of proper care for trees would apply little to it. Above is a beautiful, informally shaped Shingle Oak in Chautauqua grounds, Boulder, Colo.

SCIENTIFIC TREE CARE

Most of the pictures used to illustrate this article are from the City Forester's office and George W. Kelly. Drawings by M. Walter Pesman and John Swingle.

EIGHTY five years ago the first trees were planted in Denver. Sixteen years later 21 carloads of nursery stock was shipped into the city. These trees were of only a few hardy kinds. Today Denver has around 200,000 shade trees and perhaps 2,000,000 shrubs. Each year that goes by there are new plants added to the list that can be grown in the state, and in the last few years there have been several of our best trees removed from the lists of suitable trees because of serious pests.

The planting and appreciation of trees and other ornamental plants goes hand in hand with the aging and permanency of a community. When people feel that they want to settle down and really live in a community they improve their private and public grounds with suitable plantings.

For many years trees and other plants were simply planted out, watered occasionally and otherwise left to their own devices to grow or at least survive. Most of these trees were brought in from older communities where the climatic conditions were favorable for their growth. We could supply the water that they needed by artificial irrigation, but we did little towards correcting the other difficulties of plant growth found here. Our soil was alkaline, our air was dry, our winter sun hot, our

spring weather very erratic and few of the natural controls of pests or diseases were found here because there were no native trees of these introduced kinds. After a few years various pests found their way here, and did not have much to stop their rapid spread. Scale insects especially seriously damaged our elms, ash and maple. Still we thought that we would "let Nature take care of them," and did little to combat these pests. We found when we did begin to study a little about these things that most plant diseases spread less readily here and that many insects spread much more rapidly than they did in the East. We were compelled to devise new controls to fit our peculiar conditions.

During the last fifty years or so, there had been little demand for trained tree experts, so when, a few years ago many new pests suddenly became serious we were not prepared with sufficient trained men to combat them. We are now faced with the problem of training men in the proper care of trees and also training home owners to appreciate the value of these trained men.

It is not to be expected that every owner of trees will become a tree expert but everyone should learn enough of the principles of good tree care so that they may know when they are



getting a good job of tree work and when they might be having unnecessary or dangerous work done on their trees.

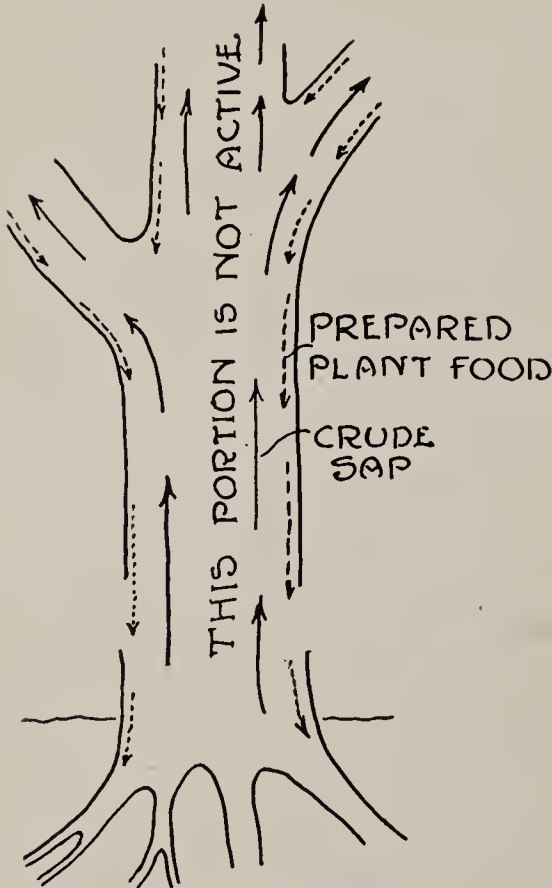
The first step in the program for better trees is the selection of suitable varieties for the location and their proper planting. Trees must be spaced



WATER AND MINERALS GO UP THROUGH THE WOOD (XYLEM)

set out, and they should be thoroughly watered at proper intervals.

We must learn that the most profitable tree work is that done when the trees are small, and also the later preventive work to keep them in good health. Vigorously growing trees will need little surgery or other expensive work, except for storm damage and certain pests. Most trees do not receive proper watering. The ground should be soaked deep and thoroughly around their farthest roots. We are gradually learning that most of our trees need a careful program of fertilizing. Spraying to control many insect pests and diseases has become a necessity. These things are worthy of separate treatment for they are complicated matters involving chemistry and the principles of plant growth. It is the purpose of this article to illustrate by pictures and



BOTH STREAMS
FLOW THROUGH THE TRUNK
- IN SEPARATE CHANNELS -

so that they have sufficient room for both top and root growth. Kinds should be selected which will grow in the shape and size to fit their environment. The soil where they are to be planted should be prepared and the holes dug large enough to allow a good start of root growth. The small trees must be carefully handled to prevent damage to the roots by drying winds or sun. They should be carefully trimmed or cut back when



PREPARED
PLANT FOOD
GOES DOWN THROUGH
THE BARK (PHLOEM)



This Silver Poplar had a piece of pipe fastened to it many years ago. This picture shows how the natural flow of sap has deposited new growth around the pipe in a vain effort to heal this wound.

words the most important principles of tree trimming, cabling and filling.

Before going into the technique of trimming trees we should review briefly the story of how a tree grows, for all effective tree care depends on a knowledge of the life processes of a tree. Mr. Pesman described this process rather fully in the December 1948 Green Thumb. We particularly need to remember that the crude sap flows up from the roots in the sap wood near the outside of the trunk and that the "digested" food, dissolved in water flows "down" to all the parts of the tree through the cambium layer, just under the bark. We need to know how the leaves "manufacture" this food through the

Here is an extreme example of the dominance of man over plants. Contrast this treatment with the graceful informality of the Oak on page 6. Either system might be appropriate in their proper place. Picture of the home of Mr. and Mrs. Frank Harris, 2256 Franklin Street.





Tree limbs may be too low



or too high

*Crotches may be too sharp and
subject to storm damage*



*or they may be at a sturdy angle
and safe.*



*Note bad crotch which has split and repaired with a brace rod
in upper left picture on opposite page.*



or lop-sided



or conflicting

Broken limbs



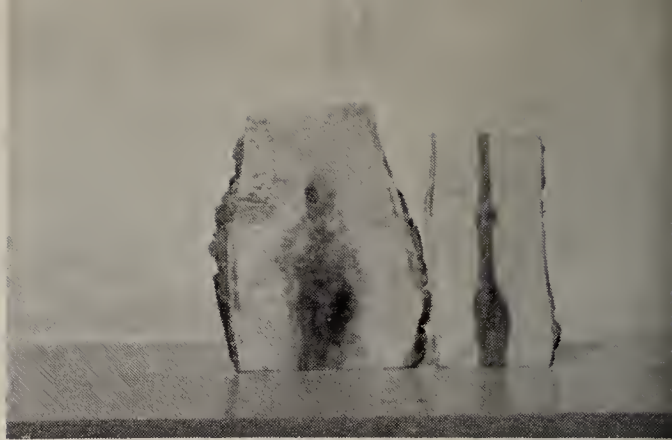
and stubs



*need to be removed as soon as possible so that wounds may heal quickly
without allowing decay to enter tree.*



Badly cut stubs, cut years ago. No chance to heal over properly.



and here is what happens to the center of the tree, with decay following down, often to the base.

action of the sun on the chlorophyll in them, and that the roots are "soup caters" and must have all their available food in solution.

The first principle to learn in the proper trimming of trees is that no cut should be made without a definite reason, and that it is as bad to make a cut unnecessarily as to not do any trimming at all. We might indicate that the principal reasons for trimming a tree are to:

1. Shape the outside of the tree to fit its situation, such as cutting low hanging limbs, interfering limbs, overly long limbs or those which have been forced to grow too high.

2. Build up a sturdy framework in the tree by cutting out cross limbs, duplicate limbs, dangerous crotches

and weak limbs. Most of this work should be done when the tree is small.

3. Remove weak, dead and unwanted limbs as soon as possible so that the wounds may heal over and prevent decay and disease damage.

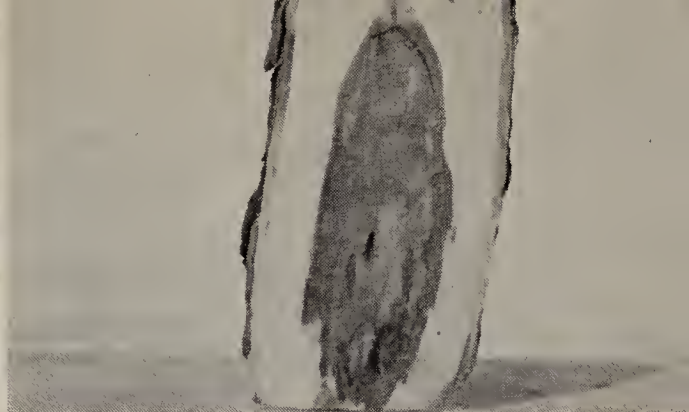
The proper methods to use in making necessary cuts will be governed by the principles of plant growth. The most important of these rules is that all cuts into the cambium layer must be "streamlined" so that sap flowing by from the leaves can rapidly deposit new cells to heal over the wound. The various techniques will be illustrated by pictures. The most common error is to leave stubs under the mistaken impression that these cuts make a smaller wound and so injure the

Cuts made like these





Another large limb which has been cut square off with no chance of proper circulation of sap to heal over the wound.



The heartwood in the center of the tree is shown here almost all decayed and the tree severely weakened.

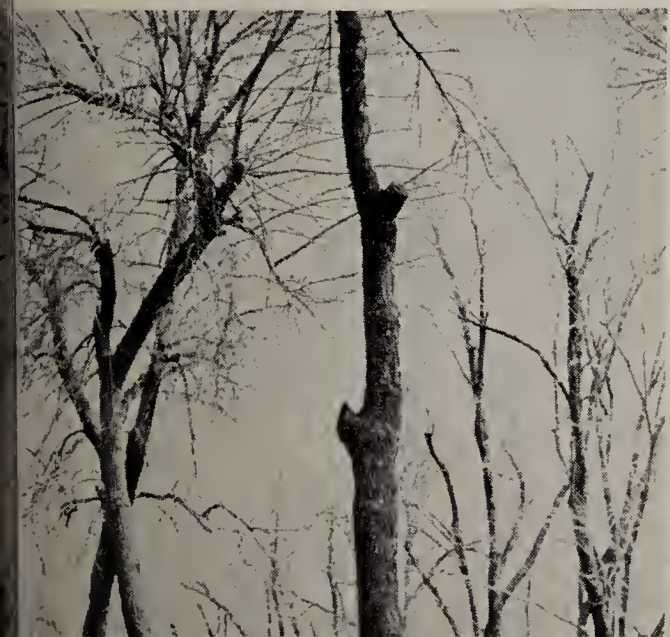
tree less. Unless there are growing leaves beyond these cuts there is no possible chance for a flow of healing sap by them which could heal them over. They remain to decay and allow this decay to enter the tree and seriously damage it.

When we understand how a tree grows we can understand why "topping" or "skinning" off all lower limbs ruin both the beauty and health of a tree. The best tree experts will make necessary cuts as close to the trunk or larger limb as possible, then, if necessary, they will "point up" both upper and lower ends, they will smooth up any irregular places and shellac the cambium exposed to keep it from unnecessary drying out. They will disinfect the newly cut surface to prevent entrance of decay spores

and will cover all these freshly cut areas with a good flexible tree paint to preserve it until the new growth can seal it up.

Trees of irregular growth or those which have been damaged by storms will frequently be benefitted by proper bracing and cabling. This is a technical job requiring considerable experience and equipment. Properly done it can prevent much serious damage. Filling decayed areas in trees is a still more technical procedure. An otherwise healthy and long lived tree may be worth considerable work in this line, but an old, short-lived or badly damaged tree may not be worth much of this rather expensive work. Here is where you must trust the judgment of an honest and experienced tree expert.

can never heal over properly.





Trees topped like this

Trees crowded like these become a distorted mass of limbs reaching for the sunlight.

and can never become the beautiful well-balanced trees like this one of the famous Brown Oaks.





look like this after the first year



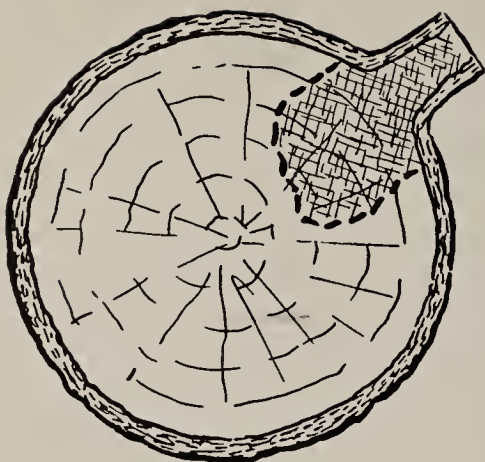
and like this the second.

*They become distorted and weak because
of their competition for sun and
soil room,*

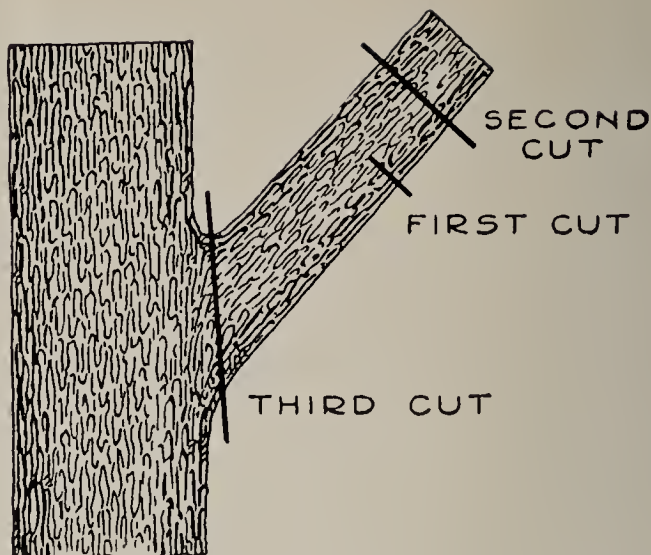


*or the lower limbs are unnecessarily skin-
ned off making them look bare and
ugly like these.*





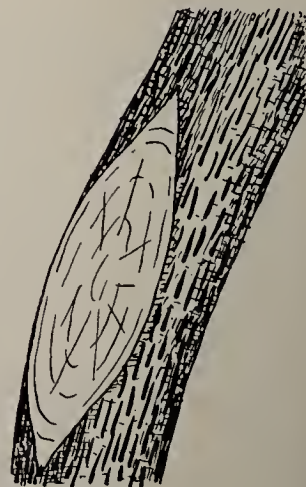
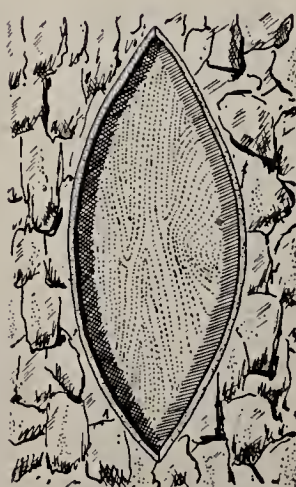
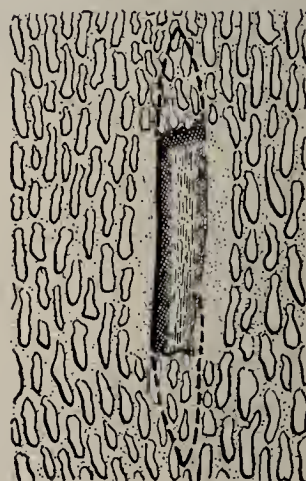
This drawing shows how decay grows into a tree when a stub is left which can not heal over.



Steps in safely cutting off a large branch.

Methods of properly pointing up a wound.

When a wound is not pointed up so the sap can easily flow by, it can not heal quickly or properly.





Above shows car damage to base of tree, when properly cleaned out, pointed up and painted. Picture at right shows a similar wound a year later. This is healing perfectly from top to bottom.



A vigorous tree making an attempt to heal over a wound. This would be better if it had been pointed a little at top and bottom, and repainted to fill cracks.

Close cuts, properly made a few years ago. Now completely healed before there was any chance of decay starting in tree.



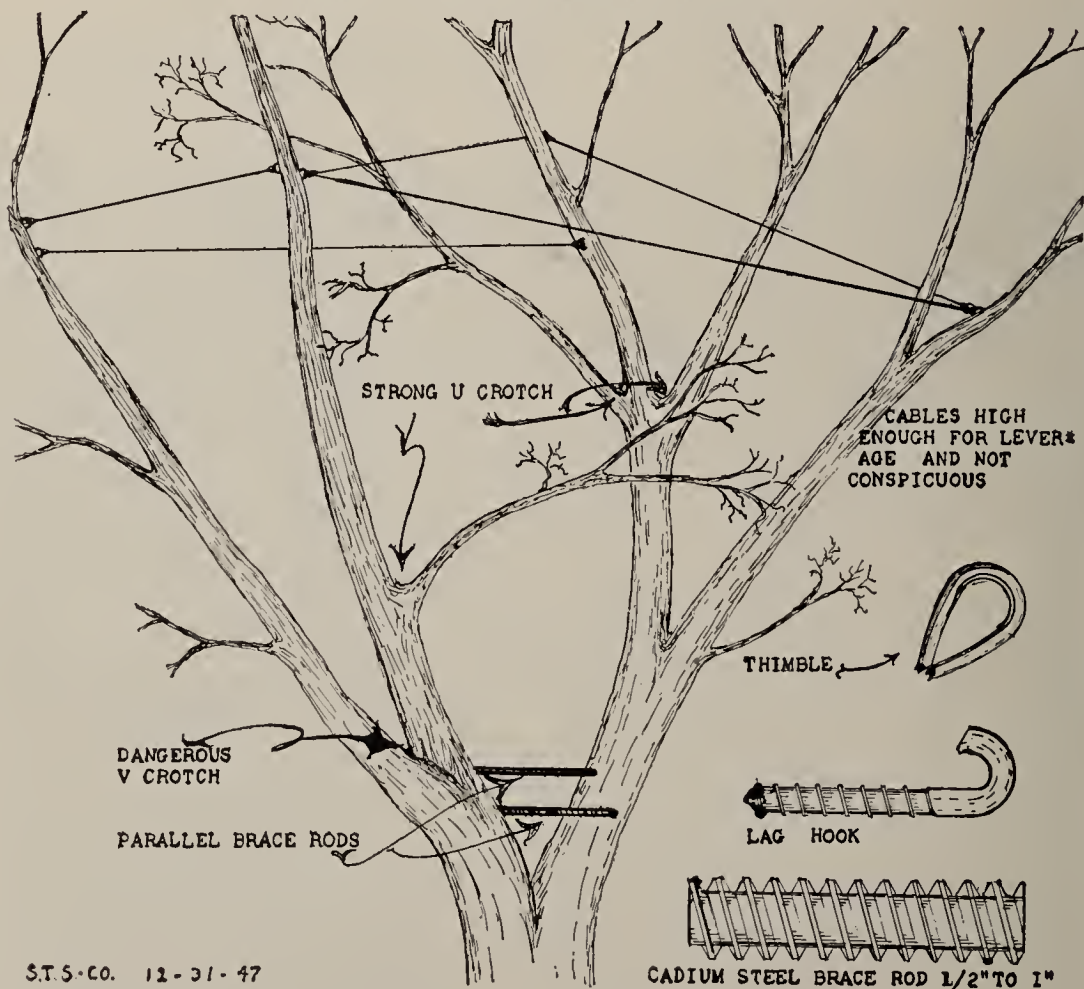


Properly made open cavity which is healing quickly.



cement filled cavity in old apple tree, beginning to heal.

TRIANGULAR CABLING & BRACING SYSTEMS AS INSTALLED BY SWINGLE TREE SURGEONS
USED & APPROVED BY NATIONAL PARK SERVICE



S.T.S.-CO. 12-31-47

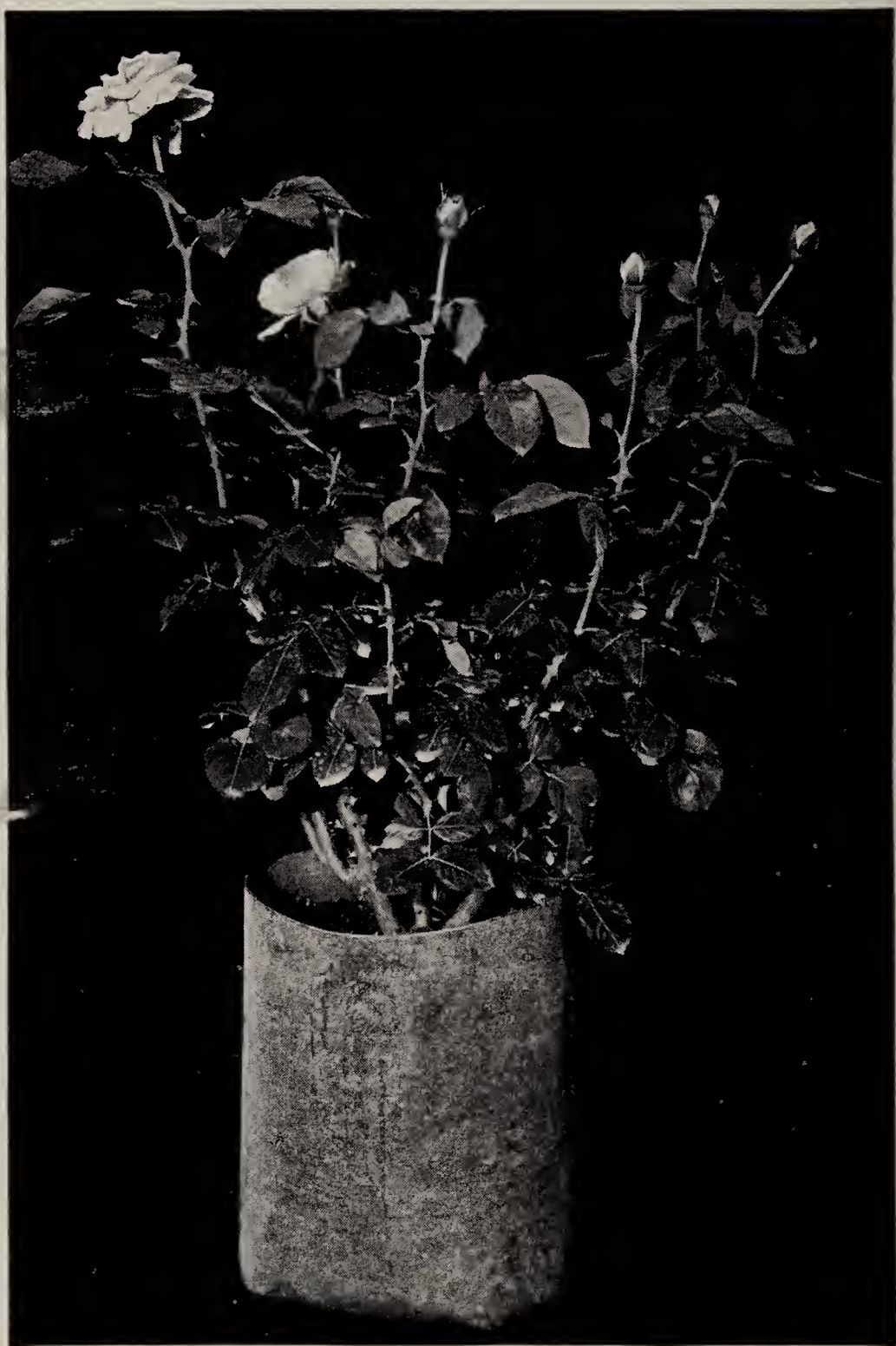
CADIUM STEEL BRACE ROD 1/2" TO 1"

Trees with weak crotches, heavy limbs or storm damage may be saved with proper bracing and cabling.



A well cared for tree is a valuable asset to any park or garden. Above is Soft Maple in City Park.

Richards' Roses **are still . . .**



. . . incomparably better

There is Nothing Like Them in This Region!

(Several nationally-known rosarians who have dropped in on their coast-to-coast tours were kind enough to tell us there is nothing like them in the entire United States.)



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Richards' pioneered container-grown roses in the Rocky Mountain region and our eleven years experience with many thousands of plants is your assurance of quality **incomparably better** than the cheap imitations frequently offered.

PLANT NOW! IN FULL BLOOM!

Over 100 varieties finest 2-year budded field-grown hybrid tea roses (including all four 1950 AARS and the best of recent AARS), polyantha roses, floribunda roses, climbing roses.

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In Richards' greenhouses and in Colorado's finest garden store: SO MUCH to make outdoor living and your gardening less work and more fun!

WHAT ARE BOTANICAL GARDENS FOR?

M. WALTER PESMAN

MAMMA, let's go and see the monkeys at the Zoo!

Doesn't that bring back happy memories of childhood? And don't we all, grown-ups that we are, get a lot of pleasure from watching the lions and the polar bear, the monkey-island and the buffalo-hill?

Now plants don't jump around of course, and flowers don't provide the antics of little bear cubs. All the same, an arboretum or a botanical garden attract almost as many visitors as a zoo, both children and grown-ups. Only, the chuckles and the awe inspired by a zoo are replaced by a more quiet but joyous enthusiasm in a beautiful flower garden or tree collection.

As a public attraction then, a Botanic Garden is of first rank for a city. At certain periods of the year, in fact, it is an A-number-One drawing card.

"Come down to Kew in lilac-time,
in lilac-time, in lilac-time;
Come down to Kew in lilac-time,
(it isn't far from London!)"

Similar songs might be written for the Fall Glory in the Arnold Arboretum, or the Rose Festival in Portland. Each Botanical Garden has its high spots when its beauty "takes your breath away."

Modern layouts provide not merely

Perennial border in City Park where we hope someday to have an Arboretum.



"one of each", but have large groups of spectacular trees and shrubs, annuals and perennials, bulbs, hedges, what not. A number of gorgeous crimson and golden colors are placed together for fall display, and are provided with a solid background of dark green as a conspicuous foil.

This then constitutes the popular appeal of a Botanic Garden; it is only a small item in its many important functions. We are reminded immediately of the fact that the Royal Botanic Garden at Kew has been responsible for the introduction of rubber into the Malay Peninsula and Ceylon, and for growing the quinine tree in the Indies. In other words, Botanic Gardens may well become important economic assets.

We might go on and pick out, at random, a number of such functions of botanic gardens; some might stress one aspect, others two or three, depending on location, management, or even whim.

Let's rather make a systematic list of these functions. At least a dozen of them can easily be identified.

1. Practically all botanic gardens, and arboretums, serve as a *popular show-ground* of trees, shrubs, and other plants, either outdoors or in palmhouses, conservatories, ferneries, or other structures.

2. Collection of carefully labeled specimens act as a *check-up on plants* whose name is wanted, an identification method, superior to a herbarium, which is merely a collection of dried botanical specimens at one stage of their growth usually.

3. Since a botanic garden is constantly trying out plants from all over the world, it becomes in time an ex-

cellent dependable *testing ground* for both ornamental and economic plants, that may or may not be hardy in a particular region, or that may require special soils or special conditions.

4. *Stations for Plant Introduction* are needed in a variety of climates and geographical situations in order to give the best opportunity for survival and subsequent distribution. Doesn't it stand to reason that an apricot from, say Turkestan, would have a much better chance of being acclimated for further use in a similar climate like Denver, rather than to run the gauntlet from Turkestan to Massachusetts, to California, and so on? It takes a hardy specimen to survive such a radical change.

5. *Production of New Plants* through breeding, selection, and possibly through physio-chemical action, is becoming a more and more important function of modern botanic gardens.

6. *Propagating Grounds* for new plants and new introductions of exotic plants are necessary in order to distribute them efficiently and economically. Few private concerns can afford to take chances on the success of untried novelties.

7. *Training of horticulturists* is a tradition of long standing of the Royal Botanic Garden at Kew, and is a most logical function of any such institution.

8. *Scientific Laboratories* for the study of Plant Ecology, Plant Physiology, Genetics, and related branches are both necessary for their proper function, and also a natural outcome.

9. *Laboratories for the production of economic and scientific Plant Products* are logical attributes of the previous function.

10. Many Botanic Gardens and Arboreta have developed into *educational centers* for the public information about plants. Some have

appealed to the young people, as the Morton Arboretum, others to the University level, as most European Botanic Gardens. Cooperation with schools, garden clubs and other organizations is in line with this function.

11. *Publication of scientific and educational bulletins, books and pamphlets*, and similar literature is a natural outgrowth.

12. *Special Services* for the use of horticulturists, botanists, home owners, and manufacturers of plant products have become important in some such institutions. Their character is often the outgrowth of particular needs and desires of a community. A collection of the best hedges may be shown, a well-landscaped back yard, an herb garden.

This list is merely indicative of what institutions of this type have done or are doing. I am sure that many a reader, by this time, has thought of some other function that a Rocky Mountain Botanic Garden might well fulfill.

With the varied topography in the immediate vicinity of Denver, for instance, we could establish a most unique Botanical Garden, featuring plants of at least five different plant zones. Collections of alkali-resistant plants come to mind, a cactus and other succulents garden would be highly instructive, rock gardens and dry walls have opportunities.

What can be done with our many plants that have a milky sap? Can native rubber be produced? What drought-resistant plants may be introduced? What cross breeds of hardy ornamentals, vitamin-rich vegetables? New edible hawthorns?—Are these fanciful dreams? Or possible realities? The Rocky Mountain Region will, I am sure, give many a valuable plant gift to the world at large and to posterity.



This arrangement, made in a Chinese brass bowl, consists of love-apples, cat-tails, wheat, gardenia leaves and artemesia. It was made by Mrs. Charles Enos and Mrs. Wallin Foster at a show sponsored by and held at Daniels and Fisher, emphasizing table settings and decorations.

The Package of Seeds

By EDGAR A. GUEST

I paid a dime for a package of seeds
And the clerk tossed them out with
a flip.

"We've got 'em assorted for every
man's needs,"

He said with a smile on his lips;
"Pansies and poppies and asters and
peas!

Ten cents a package! And pick as
you please!"

Now seeds are just dimes to the man
in the store,

And the dimes are the things that
he needs;

And I've been to buy them in seasons
before,

But have thought of them merely
as seeds;

But it flashed through my mind as I
took them this time,

"You have purchased a miracle here
for a dime!"

"You've a dime's worth of power
which no man can create.

You've a dime's worth of life in
your hand!

You've a dime's worth of mystery,
destiny, fate,

Which the wisest cannot under-
stand.

In this bright little package, now isn't
it odd?

You've a dime's worth of something
known only to God!"

These are seeds, but the plants and
the blossoms are here

With their petals of various hues;
In these little pellets, so dry and so
queer,

There is power no chemist can fuse.
Here is one of God's miracles soon
to unfold.

Thus for ten cents an ounce is Divin-
ity sold!

"The Package of Seeds" is from the book *Col-
lected Verse of Edgar A. Guest*, copyright 1934 by
the Reilly & Lee Co., Chicago.

CORRECTIONS AHEAD

KATHLEEN MARRIAGE

COLORADO SPRINGS, COLORADO

Errors creep into our language—
or slang— and become so estab-
lished that they are as difficult to
eradicate as crab grass from the lawn.

The word 'Yard' used for orna-
mental areas puts a shiver down my
back every time I hear or see it. A
'yard' was originally an enclosure to
hem in animals or children and was
consequently bare of vegetation except
for a wall. A yard may be a stable
yard, chicken yard, play yard but it
is not a lawn or garden. For good-
ness sake let us stop calling our lawns
and shrubbery a yard. It is all garden
whether front, side, back or middle.

In pioneer times when little plant-
ing was done except vegetables a
vegetable plot became a 'garden'. We
still have the hangover from this, "I've
put in my garden but I've done noth-
ing about my front yard yet".

A bee in my bonnet? Perhaps, but
turn to the best in horticultural liter-
ature and you won't find 'yard' ap-
plied to any planted area. William
Robinson, Reginald Farrer, B. Y.
Morrison, E. J. Salisbury, Helen Fox,
they discuss gardens, not yards.



Another triumph if the Colorado
Horticulture and Forestry Associa-
tion could correct it internationally:
the application of the name Colorado
to the pestiferous potato beetle. Last
summer when we heard of them in
dense swarms in France and Belgium
it wasn't pleasant to hear the name,
"Colorado", applied to them. Possi-
bly this beetle is the one connection
with Colorado in the minds of many
who suffered from them. Can't we
do something about this? And keep
on doing it until we succeed.

CONSIDER THE ORNAMENTAL GRASSES

HELEN MARSH ZEINER

IN our quest for plants with which to beautify our homes we frequently overlook a most interesting group—the ornamental grasses. To many of us “ornamental grasses” brings to mind only the old familiar ribbon grass, but this is only one of many possibilities. Among the grasses we find annuals or perennials, showy inflorescences or striking foliage, low plants suitable for borders or tall plants for ‘fillers’ in the perennial border or massing by themselves. Easy to culture, adaptable to many situations, the ornamental grasses deserve a place in the garden.

Grasses will live in nearly any garden soil, but they thrive best in a well-drained, good garden soil. Planting may be done in early spring or fall, with tall forms needing about two feet of space, low forms about a foot. A winter mulch of dry grass or straw is advisable. Occasional division will keep the perennial forms in check. Give the grasses the care you give your other garden flowers and they will reward you amply.

About fifty grasses are grown as ornamentals, about ten of which are commonly stocked by nurseries so that it is easy to obtain either plants or seed. Among the more readily obtainable and desirable ornamental grasses are the following:

Ribbon Grass—*Phalaris arundinacea picta*—This is the familiar old-fashioned ribbon grass, a perennial form grown for its green and white foliage.

Pampas Grass—*Erianthus ravennae*—A tall perennial with a beautiful silvery inflorescence. Sometimes listed as Blue Lyme.

Plume Grass—*Miscanthus sinensis*—Nurseries may also list this grass as *Eulalia*. The plume grasses are tall perennials with large showy silky plumes of flowers. Three varieties are obtainable: *gracillimus*, with very narrow leaf blades; *variegatus*, with blades striped with white; and *zebrinus*, with blades banded with white. The two variegated forms combine beauty of bloom with extremely interesting foliage.

Quaking Grass—*Briza maxima* and *Briza minima*—These attractive tall annuals have interesting graceful flower clusters often tinged with purple or brown, desirable for winter bouquets.

Blue Fescue—*Fescue glauca* or *Fescue ovina glauca*—Here is a grass with a

Plume Grass, Miscanthus sinensis.



Quaking Grass, Briza maxima.



definitely bluish inflorescence, low-growing and useful as a border plant. Perennial.

Fountain Grass, Feathertop—Pennisetum japonicum—A perennial with tawny to purple flower heads, frequently used in borders or around fountains, thus the common name "Fountain Grass".

Pennisetum ruppelii—This perennial, which has been used effectively in the Denver parks, has lovely pink or purple blooms. Sometimes known in the nursery trade as *P. ruppelianum*.

Job's Tears—Coix lachryma—An annual grown primarily for its interesting seeds.

Striped Corn—Zea japonica—An annual grown for its novel variegated foliage.

Cloud Grass—Agrostis nebulosa—An annual with a delicate and attractive in-

florescence, cultivated for dry arrangements.

Less easy to obtain but desirable to try are:

Colorado Bunch Grass or Indian Rice Grass—Oryzopsis hymenoides (O. cuspidata)—A native grass with a spreading, delicate bloom.

Oatgrass—Arrhenatherum elatius bulbosum—A low growing variegated grass suitable as a border plant.

Amethyst Fescue—Festuca amethystina—A slender perennial with lovely purplish blooms.

Golden Top—Lamarckia aurea—Large golden yellow to purplish flowers. Annual.

Feather Grass, Needle Grass—A perennial with a few-flowered panicle, the spikelets bearing very long feathery awns.

THREE HARDY BULBS

T. PAUL MASLIN

BEING a relative newcomer to the state, a migrant from California, I have very much enjoyed tackling the problem of learning to garden all over again in Colorado. Plants with which I unsuccessfully struggled there, grow like weeds here, and many desirable and lovely temperate zone plants apparently won't grow here at all. For fear of offending natives I'll quickly pass over the subject of plants which are said to grow in California but not in Colorado. In spite of my being reminded by derisive California friends that I might as well give up gardening, I couldn't resist bringing with me several of my favorite plants. I must admit that all of these fellow migrants have not succeeded, but some have, and once here I began eagerly exploring the gardens of new friends and have made a number of really gratifying "discoveries". Among these and my fellow plant migrants are three bulbs which in my opinion deserve a little publicity. They can't be

complete strangers to Colorado, with so many experimentalists working here; but they certainly are not widely used or generally known.

The first of these I brought with me from California. Because of circumstances which could not be avoided it was necessary to cut off their foliage and dig the bulbs in August while they were still green. After arriving at Fort Collins it was two months before I had soil of my own in which to plant them. As I had been told of the extreme cold one could expect here in Colorado, I planted half the bulbs a good eight inches deep and the rest a few inches below the ground as I had done in California and hoped for the best. All the bulbs survived the winter and one flowered the following summer. Thereafter I left them out each year and they have multiplied and flowered for me ever since. For this reason I have a warm feeling of friendship for them; they were Summer Hyacinths or Cape Hyacinths as they are some-

times called — (*Hyacinthus candicans* or *Galtonia candicans*).

Late in the spring these bulbs send up massive, erect leaves about two inches broad and two and a half to three feet high, these are followed in July by a four foot, fleshy stalk that bears about fifty white, pendulant, bell-shaped flowers. The lower buds on the stalk bloom first and for about a month thereafter the higher buds successively come into bloom as the lowermost flowers wither away. Personally I do not find the flower spike particularly attractive, especially as the withered flowers hang on and are unsightly; but a group of the plants is extremely handsome if for nothing else but the foliage. Extreme cold kills the leaves leaving them a soft pulpy mass, and because of their large size the rotting foliage leaves a relatively huge gaping hole in the ground. This has always worried me; but rather than dig the bulbs and cure them off I have simply covered the holes with soil to keep out slugs, millipedes, and frost. Whether right or wrong the bulbs survive. The plants thrive in full sun or partial shade and in any type of soil; but are inclined to rot in wet, heavy clay while they are dormant. This is a good plant and well worth growing as a foil behind such flowers as thin foliaged annual phlox, or low growing pink or blue Petunias.

The other two hardy bulbs I found growing in Colorado when I arrived. One of these, the Crown Imperial (*Fritillaria imperialis*), I heard about through a friend who had inherited them when she settled in Fort Collins. They had been growing undisturbed for years in deep shade east of a group of lilacs and west of her house. I could not recognize the plants from her description and as they were dormant then (July), out of curiosity I offered to dig and separate them for

her and was graciously awarded with several odd, doughnut shaped bulbs for my pains. After literally groping through the soil for quite some time and over a considerable area I finally discovered the clump of some thirty bulbs tightly packed together about ten inches below the surface. Taking my lead from this successful planting I placed my bulbs in rich soil on the east side of my own house where they were shaded from the morning sun by huge cottonwoods. That winter was a hard one with lots of late snow. But during a warm spell in March to my horror succulent lily-like stalks pushed up out of the ground along with the daffodils. These stalks carried beautiful, shiny, three inch, rich green leaves in dense whorls and were extremely handsome; but seemed hardly in place at that time of the year. When they were about eight inches high it snowed and nearly bent them to the ground. I thought they were done for; but after the thaw they righted themselves and continued shooting on up apparently uninjured. Then in May a length of stem near the tip grew more rapidly, leaving most of the leaves behind. A cluster of buds then appeared beneath a small tuft of leaves at the tip of the stalk. The plants were snowed under once more but after the thaw the unharmed buds opened into one and one-half inch, orange, lily-shaped flowers which formed an inverted crown around the tip of the stalk. I have become accustomed now to the startling early growth of these large lilies; but their unseasonal beauty in our late snows always surprises me.

The Crown Imperial does not multiply rapidly; but once established they are quite permanent and may be left in place for years. Time for dividing can be determined by the number of stalks which appear. In the rich shaded soil at Fort Collins the

bulbs doubled themselves in one year; but the lateral bulbs so formed were rather small, and did not bloom until the second year after they were separated.

Crown Imeprials come in several colors, I do not have the reddish purple or yellow varieties but see no reason why they should not be as successful as the orange. The main drawbacks of the plants are their inability to tolerate strong winds and their unpleasant odor. In spite of this latter fault we pick them and use them in the house; for this purpose they are really choice, lending themselves to fine arrangements, and after an hour or two one hardly notices the smell. It is amusing, however, to see the polite but slightly puzzled expressions on the faces of our suspicious guests.

The last plant, and the most spectacular, has proved perfectly at home in both Fort Collins and Boulder. This is the hardy amaryllid lily *Lycoris squamigera*. I inherited three clumps in my Fort Collins garden, but later discovered they had been given the previous owner by a neighbor two houses down who had quite a planting of his own. My clumps had been in place undisturbed for some six or seven years. They had been planted in a partly shaded spot in poor soil near the edge of our property where they ordinarily received but little water. Early in the spring these clumps push up their broad strap-like leaves. Usually the tips of the leaves are frost bitten but no harm is done to the plants. They rapidly develop into large coarse dark green clumps. The long leaves ripen off in July and then about a month later out of the bare ground naked stalks push up about two feet high. Each of these stalks then bears from three to six large, pink, lily-like flowers faintly

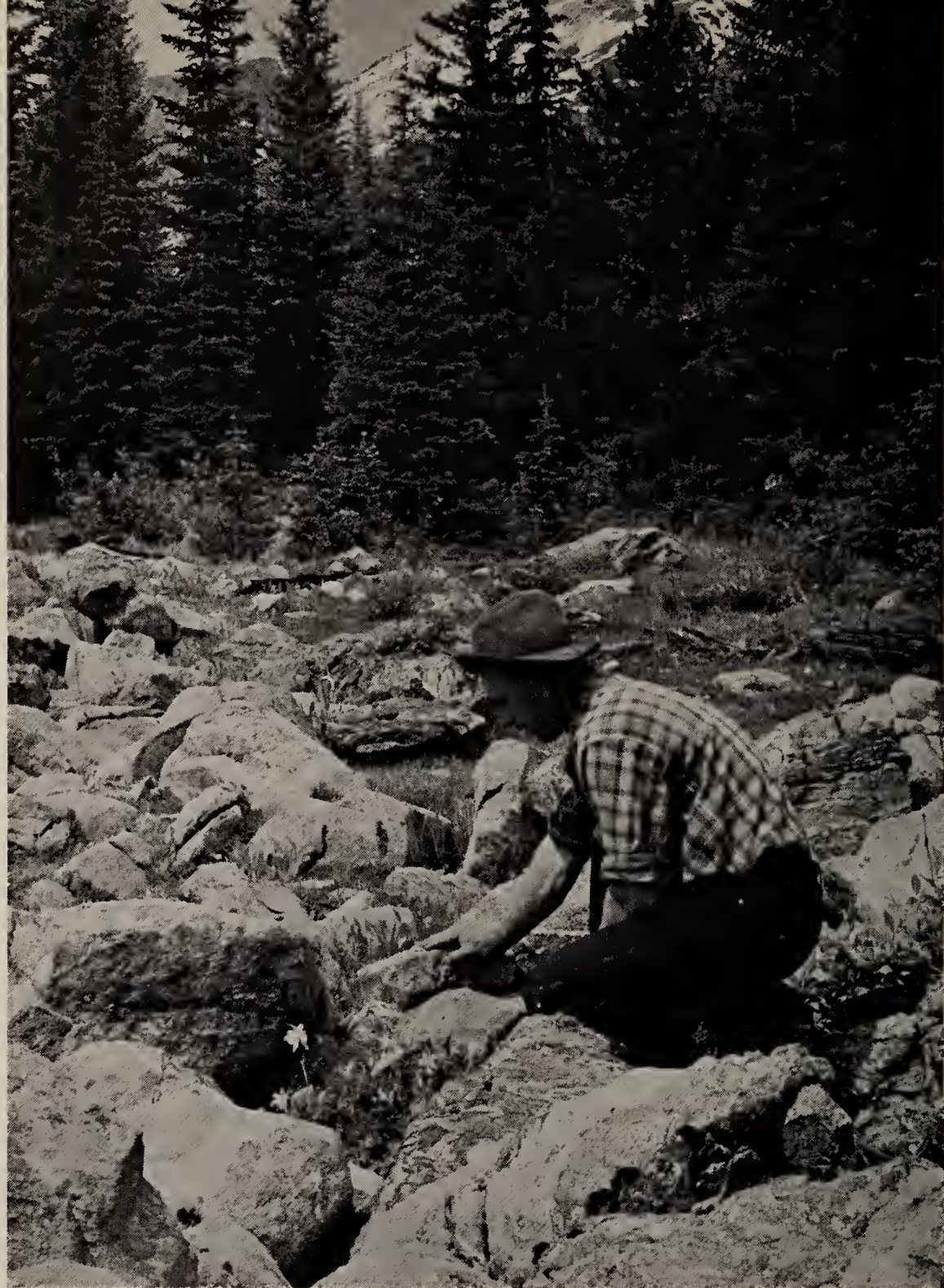
suffused with blue. These flowers are startlingly beautiful at this time of the year and always arouse a great deal of comment. Before I left Fort Collins for Boulder I dug up these clumps and found that each consisted of from twelve to eighteen bulbs about six inches beneath the surface. I gave away most of these but took the rest to Boulder. Some were placed in shaded heavy soil and still others in poor soil in full sun. All grew, but the shaded specimens are doing rather poorly and never flower, nor do they multiply. Like many amaryllids these *Lycoris* seem to do best when crowded and left undisturbed. I might add that the catalog accounts ascribe to them a faint perfume; but my clone is scentless.

All three of the bulbs described above have tolerated temperatures of -30° F. for several hours' duration and below zero weather for several days on end. They have also proved themselves capable of standing considerable abuse and in my opinion are worthy additions to any Colorado Garden.



The Land of the Incas

Everyone loves a vacation trip whether to some especially lovely spot near home, or to one of the mysterious far-off places of the world. Since many of us can't quite reach the farthest places on our vacations, Mr. John T. Roberts is bringing them to us at Horticulture House, on Friday, June 2, at 7:45 P.M. Everyone who's dreaming of a trip away from home (and who isn't at this season?) will want to hear Mr. Roberts tell of his journeyings in fabulous Peru, Land of the Incas. And no one can bear to miss the Kodachrome pictures of that far, strange, land which Mr. Roberts will show. Peru is calling you.



WILDFLOWERS IN JUNE

WE enjoy Colorado every month of the year.. We appreciate the mild but invigorating weather, we admire the majestic views, we love the cool forests and the tall mountain peaks, we like to wander along the rushing streams and among the clear blue lakes, we like to sleep out under

the stars and ski the snowy slopes, but the greatest thrill of all is to revel in the beauty of multicolored wildflowers in June. The first brave flowers open on the warm south slopes in April or even earlier, then the show gradually ascends the mountains until the highest peaks are reached in mid-

July. During June many flowers are still in bloom at the lower altitudes while the earliest are beginning to appear at the higher elevations. One of the nicest places to see these mountain flowers at this season is in the vicinity of Squaw Pass. Here we may find almost anything from both the montane and sub-alpine plant zones. There are open meadows, dense wooded slopes, bare ridges, moist shady north slopes, little streamlets and swampy places. Seven roads or trails radiate from this lookout point.

Squaw Pass is about 34 miles from Denver, half way between Bergen Park and Echo Lake. It is a location easily accessible yet not on the main highway where many uninterested people pass. Right at the pass is a Forest Service camp ground, and good springs are in every direction.

For the average flower lover the most interesting things are those which grow on the moist north slopes. Here can be seen the delicate Twin-flower trailing over the rocks and banks, the Pink Calypso Orchids may occasionally be seen and the Baneberry is found in sheltered spots. The dainty Dotted Saxifrage are plentiful in well drained places, Harebells may be seen all over and Columbines will be growing among the Aspen trees. Along the little trickles of water are masses of Chiming bells, Bitter cress, Shooting stars, Brook Saxifrage, Monkeyflower and Buttercups. On more open moist slopes will be Wild Strawberries, Wild Geraniums, Valerian and Stellaria. Shady nooks will shelter Mountain Arnica, False Solomon's Seal, Alumroot, Twisted Stalk, Meadow Rue and Bedstraw. Tall plants of Waterleaf, Wild Parsnip, Scrofularia and Cow Parsnip are occasionally seen. Of the shrubs, Red-berried Elder, Gooseberry, Jamesia and Low Ninebark are common. Wild Iris, Blue-eyed Grass, Geum and Bog Or-

chids may be seen in swampy places.

As we travel along the road there will be patches of the Golden Banner, Golden Smoke, White Evening Primrose, Skull Cap, Purple Fringe and Wild Raspberry growing in the loose soil along the roadgrades. On dry, well-drained slopes will be masses of Kinnikinnick, Low Penstemon, Pussytoes and Chickweed. Individual plants of Yellow Parsley, White and Purple Loco, Yarrow, Senecio and Lupine will be found among the masses of Cinquefoil, Daisies, Sandwort and Vetch. Yellow Wallflowers, Goatsbeard, White and Purple Thistles, tall Blue Penstemon, Gaillardia, Miner's Candle, Prickly Poppy, Winged Buckwheat and Paintbrush will furnish accent points all over the hillsides. Among these other large plants will be occasional patches of Indian Hemp, Wild Onions and the little Skyrocket flower. Shrubs seen will include Thimbleberry, Chokecherry, Rock Spirea, Bush Cinquefoil and Snowberry. Among the trees will be specimens or groups of Rock Cress, Green Gentian, Blackeyed Susan, Anemones both white and pink, and the tiny little Yellow Draba.

This area should sometime be included in the statewide series of Botanical Reserves for it is ideally located for this purpose.

By the time that we have seen all these plants, it will be almost close of day and if we are lucky we may sit and watch the brilliant colors of a mountain sunset come and go. Then we will finish the last of the sandwiches, take a full drink from the cold mountain spring and head back for civilization and the job next day.

This may be too much of a trip for everyone to make in a day but we recommend that it be taken in installments if one is not in condition to make it all at once.

ANOTHER LILAC CITY

Let's Have One in Every State

THE following is an extract from a letter written us by W. O. Edmondson, Extension Forester and Horticulturist, in Laramie, Wyo.

"I have glanced through your May issue of the Green Thumb, and I think the magazine is getting better and better. One story I should like to remark about is the one by Mrs. Bertha Peterson, on "Fort Collins, the Lilac City of Colorado." I also saw an item in the Denver Post three weeks ago on this subject. I think it is a grand idea.

"I do object though to the statement that Fort Collins will become the Lilac City of the 'Rocky Mountain Empire', because we have in Basin, Wyoming, the first city in this empire, according to past records, to become the lilac city of our state, and it could well be dubbed the first lilac city in the Rocky Mountain Empire. They bought and planted over 500 lilacs in the spring of 1936, on private property, around homes and along streets entering the city from the north and south. These lilacs were planted in combination with about 500 tamarisks and the colors are marvelous. These lilacs were not out in bloom last week when I was in Basin but they are surely a riot of color about May 20 to June 1.

"I wanted to give you this information because I helped Mr. A. C. Coons (now deceased) to pick out a number of the lilacs at that time and I lined out plans for most of the plantings which the city made along the roads entering the city. May I ask that further publicity on this very worthwhile Fort Collins project be called the first of its kind in Colorado but the second in our Rocky Mountain Empire? I love Fort Collins, hav-

ing graduated there a long time ago, and I congratulate them heartily on their project."

Rose Arrangement

The rose is often considered a man's flower. Since he grows it, he is interested in displaying the rose. Alfred T. Ryan, an instructor in the School of Floral Design, will demonstrate the arrangement of roses on June 16th. With a man of unusual ability as instructor, the rose as the featured flower, the program is especially designed for men. Mr. Ryan will provide an entertaining as well as instructive evening, as he demonstrates hobbies in arrangement, conversation pieces and the fundamental principles each man will want to learn.

Other garden flowers will be arranged, but the tips on rose arrangement will be timely as the Rose Show will take place the following Sunday.

SIXTY YEARS AGO:

On Monday, November 26th, 1888, a tall, distinguished young gentleman of 29 arrived at the Antlers several hours late, with no clothing but his travelling suit after surviving a wreck on the railroad from Denver which burned up the baggage car. He was the son of President Chas. W. Eliot of Harvard and came to marry Miss Mary Pitkin who was living at the house of Miss Price in Colorado Springs. Soon afterwards he returned to Boston. Colorado should have kept him as he became the most important figure in Landscape Architecture of the eighteen-nineties. (From 'Chas. Eliot, Landscape Architect—' pub Boston, 1902.)

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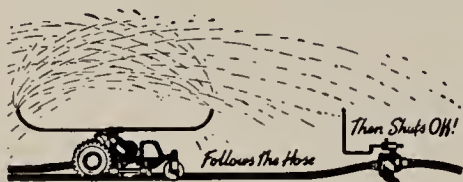
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Mrs. Louisa Arps

Books Received During the Month of May

The Herbaceous Border by Frances
Perry.

Fieldbook of Natural History by E.
Lawrence Palmer. The author is
professor of Nature and Science
Education at Cornell and Director
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Landscape with Shrubs and Flower-
ing Trees, by Mary Deputy Lam-
son. To be reviewed at length next
month.

Prints and Plants of Old Gardens, by
Kate Doggett Boggs. Scheduled for
review later.

HELEN FOWLER

BOOK REVIEW

By HELEN FOWLER

What J. W. Johnson, Horticultural
Editor of New York Herald Tribune
says about Henry B. Aul's, "How to
Beautify and Improve Your Home
Grounds."

"At long last, here is the book,
which, in this writer's opinion, will
prove one of the most valuable garden
books of the past twenty-five years.
I recommend this book to garden mak-
ers with a fervor I have felt for few
garden books in my thirty years of
horticultural writing."

In Mr. Aul's book, he insists, and
rightly so, that a garden has two
great uses, namely, to look at and to
live in, with the latter the most im-
portant. This is no banal volume, but
a living picture of the worthiness of
good design, and laid out so that the
work of the garden can be planned
and executed by the average gardener.
The author understands fully that
most small gardens are built with little
money and out of love for gardening
rather than from the standpoint of
vulgar display. In this book, packed
with ideas will be found beautifying
plans for small lots and large, corner
lots, narrow ones, hilly ones, city
and country ones.

Question: When I take my walk
in the morning I pass by places where
the trees are whitewashed. What is
this for?

Answer: This was practiced some
time ago but with the use of the new
insecticides today, it is now little prac-
ticed. These insecticides may be ob-
tained at the seed store and applied
in the early spring. This was done
to prevent growth of moss and lichens
and to destroy insect eggs.

BOOK REVIEW

HOME ORCHID GROWING

by REBECCA NORTHEN

A very interesting book on the growing of orchids in the home has just arrived at the horticultural library. It is written by Mrs. Northen, wife of Henry T. Northen, plant physiologist and Professor of Botany at the University of Wyoming. She began growing her orchids in her kitchen window and gradually added to her collection until she has two greenhouses full. She collected a great deal of information and experience and has given us her knowledge in her very interesting book.

She says in her preface "Where once there were few orchid growers, now there are thousands; where once orchids were owned only by those who could afford an elaborate greenhouse and a trained grower, now there are little backyard greenhouses springing up everywhere. Busy people from all walks of life, as well as those who have retired, are finding relaxation, joy and excitement in their orchids."

She says it is her endeavor to help the amateur with his problems as far as possible. Her book is designed to give the beginner a start and advance him through the years in every phase of orchid growing. She says people want to know the "why" in this age and she has tried to give them the facts which will help them. Much of the information in this book has never been given to the amateur before.

Orchids are not so different from other plants. They demand certain treatment and if they are given this treatment they respond. They even make themselves at home with the ordinary house plants.

The book has beautiful illustrations, many of which were made in Mrs. Northen's own home and greenhouses.

She gives the principal tribes, genuses, species and many hybrids of the very large orchid family.

It is a very delightful and interesting book to read even if you do not think you have the urge to grow orchids.—Myrtle Ross Davis.

ETHELYN C. STEWART

The first comprehensive showing of the paintings of Ethelyn C. Stewart in the West will be held at Horticulture House, from June 10th to June 30th.

The exquisite flower paintings of Miss Stewart have been purchased by



Delos Chappell, J. P. Morgan, Jr., Mrs. Christian Holmes, and other prominent families. Her work has been accorded prizes by the Pennsylvania Academy of Fine Arts; the National Association of Women Painters; the National Academy of Arts, and other groups.

Miss Stewart is also noted for her etchings and paintings on silk and other textiles, specimens of which will also be on display at Horticulture House during the exhibition.

Boulder, the Arboretum City

Boulder has taken to the idea of making of the city an arboretum. About a year ago they realized that they had unusual horticultural possibilities and that there were a large number of rare trees and other plants growing in the town. The Boulder Garden Club took on the job of labeling these trees, evergreens and shrubs. On May 7th, they arranged a tour of the city to display the hundreds or more things that had been labelled. These labels are mostly 4 x 10 inch boards with the name burned in so that it is readable from as far as across the street. Mrs. Marjorie Brown with her committee has worked hard to make these labels, place them and make a list of the trees and their location. While Maud Reed has left Boulder the horticultural signs of her stay in the city remain in the form of her unique high school garden and the planting on the bank behind the athletic field.

It is a pleasure to observe the work of communities who are doing things for the sake of a good job done rather than just for their names on a bronze plaque.

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Bleeding Heart**

Potted Purple Clematis

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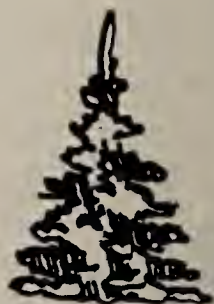
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JUNE GARDENING

CULTIVATION: As the new plants begin to grow the weeds begin to grow even faster, for they were there first. A little work when the weeds are very small will do more good than much work later. At the same time that weeds are eliminated the surface of the soil around trees, shrubs, perennials and annuals can be broken where it has become compacted from watering or tramping. This loosening of the surface does not need to be deep, for that might damage many roots. More and more, good gardeners are using suitable mulches to eliminate much of the traditional cultivation. Leaves, peat, straw, old manure or sawdust have been used effectively. Where there is no chance to damage valuable plants the 2,4-D weed killers may often be used to advantage, but this material is dangerous if it drifts on to good plants.

SPRAYING AND DUSTING: As the new plants begin to grow it is not long until all manner of insect pests show up and take their toll. Here, as with weeds, "a spray in time" is worth more than the later attempts to eliminate them after they have done considerable damage. Aphids will usually be the first things seen. They will be on spirea, spruce, delphinium or juniper. Be on guard, especially with the evergreens, for the damage done usually does not show up until weeks after the insects have come and gone. Ants running up a plant will usually tell us of aphid infestation. These aphids require a contact poison such as nicotine, rotenone, pyrethrum or some of the new chemicals to control them. If there are caterpillars, beetles or other chewing insects damaging the plants they should be controlled with a stomach poison such as arsenate of lead or one of the new insecticides like DDT or chlordane.

WATERING: If the garden has had normal watering up to June it should be in good shape. Start now training the plants for the hot weather to come by watering them thoroughly at each time but less often. Newly transplanted things will need a little extra attention.

OTHER CHORES: If fertilizers and mulches have been applied as needed early in the season, little need be done now. Later, when trees, lawns and flowers slow up they may be given a little "shot" of some quick-acting fertilizer.

Lawns should be in their prime now if they have been properly cared for up to this time. If you will watch for the tiny triangular seed-leaves of the crabgrass, early this month, it may be eliminated by digging or by drying up the lawn for a few days. Let all the clippings fall that will disappear among the remaining grass stems.

If you have forgotten to get roses or some other plants earlier, when the bare-root transplanting season was on, they may often be had now in paper pots at those nurseries who feature this kind of material.

Don't cut all the leaves from tulips after they bloom unless you do not care for flowers next year, for they require these leaves to develop energy in the bulb to produce next year's flowers.

As one of our main difficulties in growing eastern plants is the drying action of our hot sun, it is well to provide partial shade for many of the plants which are brought in from the east.



CLOUDS

BY BURTON O. LONGYEAR

*Looking aloft where I sit I see
Wonderful cloud forms drifting by
Like the waves on a wind-swept sea.
Over the landscape here below*

*Swiftly their shadows come and go
Phantom waves on a phantom sea.
June, and summer before me lies
With flowers and birds and sun-lit skies.*

July, 1950

25 Cents

The Green Thumb

COLORADO'S GARDEN MAGAZINE



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The Green Thumb

Vol. 7

JULY, 1950

No. 7

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PLAINT OF A PRICKLY POPPY

By the side of a dusty road I grow, My petals are white as the driven snow, And though man has given me a graceless name, If he cannot see beauty, am I to blame?	And when man grows up to God's perfection He'll regard me then with pure affection. 'Tis not my aim to be prosperous or great, To adorn a palace or sit in state; But daily perform my simple duty; Ever expressing God's roadside beauty.
My blood is yellow and my thorns are sharp, But my soul? 'Tis pure as an angel's harp;	—B. E. F.

*Picture on front cover of beautiful rear terrace at home of I. F. Downer,
at 270 Ogden St., Denver.*

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Lessons From The Storm

The morning after our recent unseasonal snowstorm, many gardeners felt rather hopeless about the prospects of growing trees in Colorado. If they will study the causes for the extensive breakage of trees they will learn much to prevent future damage. The storm may even be a blessing in disguise. Even though the last similar storm was 14 years ago and the next one may not be for another 14 years, it would be well to plan now to prevent a recurrence of this catastrophe.

The first factor in preventing storm damage to trees is to select the right kind of trees. Members of the Colorado Nurserymen's association have had many years experience in growing trees and in observing the effects of our weather on them. Take their advice when they recommend the better slower growing trees. Many of the quick-growing kinds are short-lived and easily broken in a storm. You cannot afford to plant a weed tree such as a boxelder, even though it is given by your good neighbor.

The next mistake made by many home owners is to plant trees too close together, so that they develop abnormally long and misplaced limbs which cannot withstand heavy weights of snow. Before you plant a tree inquire of your nurseryman as to its ultimate size and get his recommendation for spacing.

The third main cause of storm damage is lack of proper care. This may include insufficient watering, lack of fertilizing and neglected pruning. Good trees deserve good care, for they have many difficulties to combat under cultivated conditions that they do not have when growing in the wild. Give special attention to proper watering of newly transplanted trees. Trees which were properly pruned and braced previous to this last storm had very little damage done to them.

Let the lesson of the storm teach us to plant better trees and care for them in a better way. Call your nurseryman for advice.

COLORADO NURSERYMEN'S ASSOCIATION

See the February issue of the Green Thumb for list of members.



Colorado Forestry and Horticulture Association

Organized in 1884

"To preserve the natural beauty of Colorado; to protect the forests; to encourage proper maintenance and additional planting of trees, shrubs and gardens; to make available correct information regarding forestry, horticultural practices and plants best suited to the climate; and to coordinate the knowledge and experience of foresters, horticulturists and gardeners for their mutual benefit."

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JULY SCHEDULE

July 1-4. Sat. through Tuesday. Exploration and botanical trip to Sheephorn Ranch.

July 8-9. Sat. Sun. Trip to Pawnee Pass, joint with Gates Hikers. Camp at Brainard Lake Sat. nite.

July 22-23. Sat. Sun. Trip to Allens Park. Many fine wildflowers should be in bloom.

July 29-30. Sat. Sun. Trip to Boreas Pass near Breckenridge.

Aug. 5-6. Sat. Sun. Trip to Webster and Montezuma, joint with Gates Hikers.

No regular indoor meetings in July and August.

Register well in advance for all outdoor trips.

AMERICA'S FIRST CONSERVATIONIST

Don't pity the poor Indian, he may be smarter than we think. Here is an interesting extract from a recent letter from Dwight Kelly, who lives in Los Angeles, to his brother, George W. Kelly.

"As you know, we have been interested in the Hopi Indians for some time, because they seem the least spoiled of the western tribes. There have never been more than a dozen or so Hopis ever converted to the Christian religion. It occurred to me

that their religion must be very satisfying to them to keep them with it so faithfully, so I have gotten as much information regarding their beliefs as I could.

"They feel towards plants and animals as though they were as much a part of the universe as man is. They do not harvest growing plants or kill wild game without first making a prayer offering to their "super-god" for having taken of his overall work. A Hopi will not kill a rabbit unless he has first made prayer offering or 'Pahos' (generally several small feathers on a string) to explain to the gods that he needed the rabbit to eat. Nor will they take a living plant or tree. The first time that we were at the Hopi villiages I wondered why they hauled dead cedar wood for miles when there were cedar trees growing all over their towns, but I found that as long as there is dead wood available within miles they will not touch a live tree. Their religion recognizes the balance of nature."

MY WANTON SCARLET MAPLE

So feminine, so shapely-tall
 She does a Strip-Tease every fall;
 Bare Limbs all winter, then, by Jing,
 A whole New Outfit every spring.
 Her summer mode the climax caps,
 For then she just lives off the Saps.

ELIZABETH H. PESMAN



Native Oregongrape, Mahonia repens.

EDIBLE WILD PLANTS OF THE ROCKY MOUNTAIN REGION

By HELEN MARSH ZEINER

HAVING spent my childhood on an isolated ranch where often the only fresh fruits and green stuffs available were native plants, I grew up with an acquaintance with our edible wild plants that has given me a great deal of pleasure all my life. It seems unfortunate that with modern methods of food storage and improved transportation which remove the necessity to use native plants, this most fascinating branch of nature lore is being lost to many. Those who know the fun of "living off the land" are indeed privileged, and are all too few.

Most of us do recognize some of the edible wild fruits, but even here some uninitiated persons scorn these as being inferior and do not even recognize some of the less common ones. Perhaps the common western chokecherry (*Prunus melanocarpa*) is the most widely used of our native fruits.

Usually found along or near a stream, often tenaciously clinging to the rocky slopes above the stream, the chokecherry is an erect shrub or small tree with alternate, shiny leaves, brown bark marked with lighter spots, and



*Western Chokecherry, Prunus
Melanocarpa.*

long flower clusters of small fragrant white flowers followed by black fruit whose astringent qualities give the tree its name "chokecherry". The fruits make a jelly with a distinctive and truly delicious flavor. There are other uses for chokecherries besides jelly, however. Have you ever tasted chokecherry pie? Or spiced chokecherries? If you are fortunate enough to own a cherry-pitter, these delicacies are not difficult to prepare; but I consider a chokecherry pie once a year worth the tedious and messy chore of picking the pits by hand out of cooked chokecherries. If you attempt a chokecherry pie, use a spoonful or two of vinegar, and don't spare the sugar! We also made chokecherry syrup to use on pancakes; it is heavenly on waffles, too. Some of our neighbors favored chokecherry butter, but this we never cared for.

The bright orange red fruits of the buffalo berry (*Shepherdia argentea*) are another source of jelly. Delightfully tart and beautifully colored, this jelly has an undescribable flavor all its own. In Colorado, the buffalo berry is common on the western slope. It is a tree-like shrub easily recog-

nized by its opposite silvery leaves and its scarlet berries. We gathered the berries by spreading an old sheet under the bush and vigorously shaking the berries onto it. Since the berries are very small, picking them by hand is a thankless task.

Another jelly fruit of the foothills is the Oregon grape (*Mahonia repens*), easily recognized by its glossy holly-like leaves, yellow flowers very early in the spring, and grape-like clusters of blue berries later in the summer. The edible qualities of this fruit appear not to be well-known today, but it was a common sweet in many pioneer homes.

No summer trip to the mountains would be truly complete without a handful of wild strawberries or wild red raspberries to munch on along the trail; and if one is so fortunate as to find enough of either to make a shortcake or a bit of jam, then the day is perfect! For pure ambrosia, the shortcake should be made with biscuits baked over the campfire, buttered generously, and covered lavishly with crushed and sweetened berries. The wild strawberries (*Fragaria* spp.) are at their best in moist places such



Wild Strawberry, Fragaria. From painting by Emma Ervin.

as meadows and woods, but they can be found almost anywhere in the mountains, and sometimes old railroad beds or other seemingly unlikely places will yield a fine crop. The fisherman may find red raspberries (*Rubus strigosus*) along the streams where he fishes, but another very typical place for these plants is a rock slice or other bare area. The low, prickly bushes with their white flowers and red berries are unmistakable.

Wild plums (*Prunus americana*) abound along streams in the plains and low foothills. Early in the spring the thickets formed by these small trees are massed with white bloom, and later in the summer the trees are decorated with red and yellow fruits. When ripe, the plums have a delightful flavor, although the skins are usually tough and sour. They are a popular jelly fruit, making a tangy tart jelly with a beautiful color.

In moist places in the mountains, wild gooseberries and currants (*Ribes* spp.) are plentiful. While they are rather tart to eat "out of hand," they



Wild Gooseberry, *Ribes saxosum*.

make excellent jam. Our commonest wild gooseberry is *Ribes saxosum*, which is a prickly shrub with palmately lobed leaves, producing smooth and often quite large dark purple (almost black) berries. In contrast to the gooseberries, the shrubs of currant are without thorns or prickles. Currants and gooseberries are characterized by the withered remains of the flowers which crown the berries.

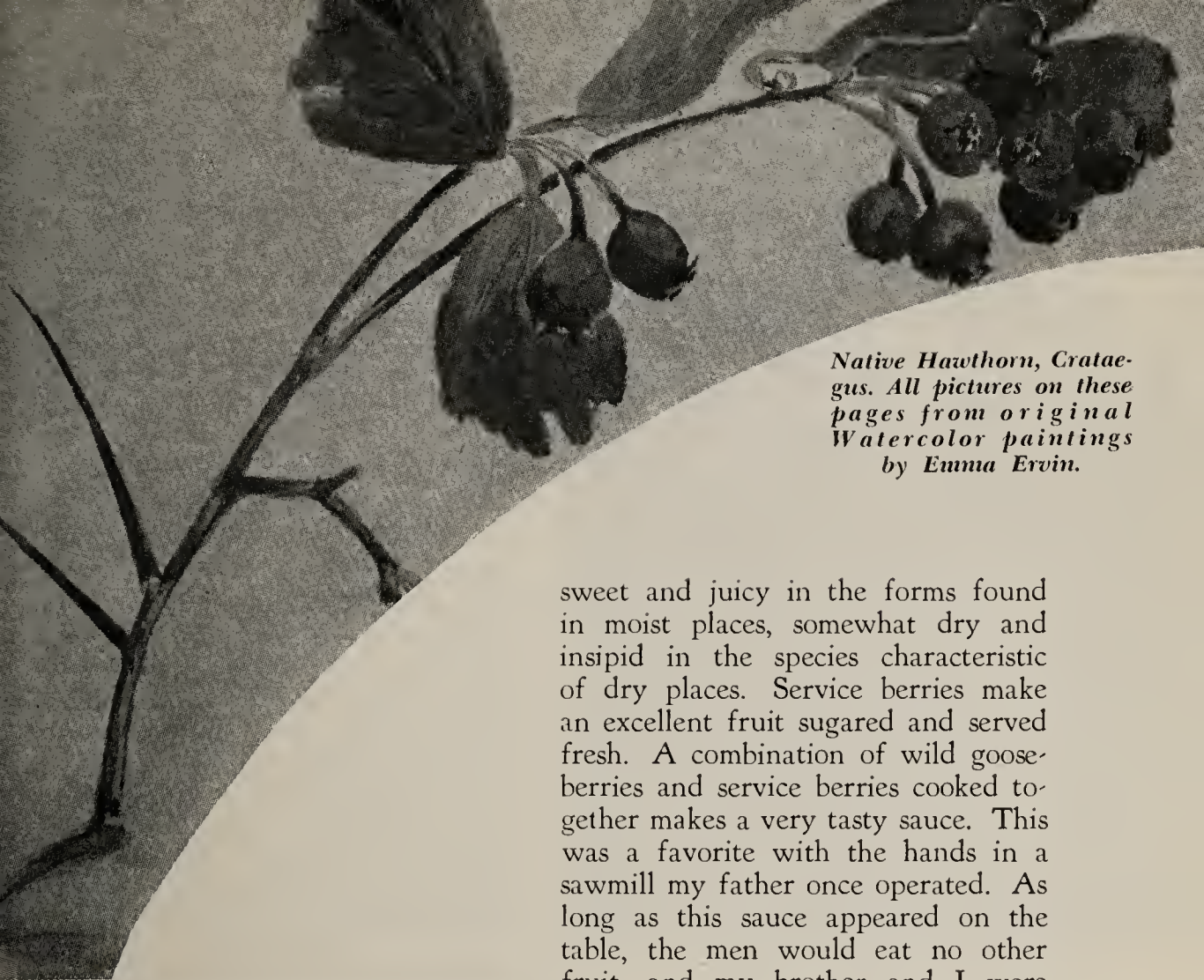
The service berries (*Amelanchier* spp.), also called Juneberry or shadbush, are shrubs (often large) with alternate, somewhat rounded leaves, and lovely white flowers with five strap-shaped petals appearing early in the spring. The berries are purple,



Yellow Flowering Currant,
Ribes aureum.



Wax Currant, *Ribes cereum*.



Native Hawthorn, Crataegus. All pictures on these pages from original Watercolor paintings by Emma Ervin.

sweet and juicy in the forms found in moist places, somewhat dry and insipid in the species characteristic of dry places. Service berries make an excellent fruit sugared and served fresh. A combination of wild gooseberries and service berries cooked together makes a very tasty sauce. This was a favorite with the hands in a sawmill my father once operated. As long as this sauce appeared on the table, the men would eat no other fruit, and my brother and I were kept busy hunting the ingredients for this treat.

Even the wild roses (*Rosa* spp.) which we admire for their delicate blooms produce a fruit which can be eaten. The pulp surrounding the mass of seeds in the rose "hip" is sweet although dry and makes a tasty snack along the trail. Our grandmothers made a kind of jam from rose hips which they considered a delicacy.

We have a number of hawthorns (*Crataegus* spp.) whose fruits can be utilized for jellies; others, while edible, are insipid.

In moist shady spots in the mountains one may find blueberries or bilberries (*Vaccinium* spp.). These are low, somewhat woody plants with shining leaves, pinkish blossoms, and dark blue berries of excellent flavor.

Most children who live on ranches know that cactus fruits are edible and really quite delicious. The next



Serviceberry, Amelanchier.



Prickly-pear Cactus, Opuntia.

time you find a prickly pear (*Opuntia* spp.) with mature fruits of the smooth variety, try one; you will be pleasantly surprised.

Although we lack the abundance of edible nuts found further east, the pinon pine gives us a sweet and nut-like seed so popular that they are frequently sold in nut shops. The pinon occurs mostly in the southern part of the state, and is a low, rounded tree with short, spreading needles in pairs. The cones are somewhat rounded, and when the scales have opened, give the appearance of clusters of flowers on the tree.

Along streams in the foothills one may find the hazelnut, *Corylus rostrata*, a shrub with roundish to somewhat heart-shaped leaves and a leafy structure surrounding the edible nut.

There are many plants in the region which can be used as "greens".



Lamb's Quarters, Chenopodium (left) Redroot Amaranthus (above).

My favorite wild greens are lamb's quarters (*Chenopodium album*) and redroot (*Amaranthus retroflexus*). In early spring these appear as weeds in gardens, on broken ground, etc. *Chenopodium* has pale green leaves, white and mealy in appearance on the underside. *Amaranthus* has roughish, dull green, wavy-margined leaves and red roots. Either one is good alone, but a combination of the two is best. Picked when very young, boiled until just tender, seasoned with butter or a bit of bacon or pork and a touch of vinegar for those who like it, and you have a tasty vegetable just for the picking—and perhaps your garden is weeded at the same time! Mustard greens are commonly used, most people preferring to mix these with mild flavored plants such as lamb's quarters or redroot. Many members of the mustard family (*Cruciferae*) are used; black mustard (*Brassica nigra*) and shepherd's purse (*Capsella bursa-pastoris*) are common ones. All mustards when in bloom can be told



Peppergrass, Mustard.



Common Dandelion, Taraxicum

by the four-petaled flower forming a cross from which the family takes its name.

The lowly dandelion (*Taraxacum* spp.) is a favorite of many, and if taken early in the spring while still young and tender the flavor is mild; as the season progresses, the plants develop a bitter taste and tends to be tough. Some people cover the young dandelion plants and blanch them to use as salad greens.

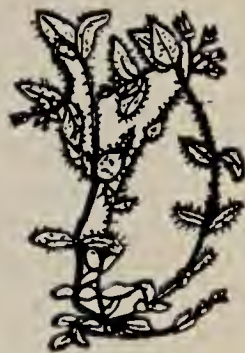
Urtica gracilis, the stinging nettle, is used as a potherb by some. I ate this plant just once as a child; all of us enjoyed it but my mother, who refused to taste it or ever to cook it again because it developed such a poisonous green color on boiling. Purslane, (*Portulaca oleracea*) that obnoxious garden pest with fat, spatulate leaves and spreading habit may be cooked or the young stems and leaves may be used as a salad. Another common weed said to be edible as a potherb is the common plantain (*Plantago major*).

The little round leaved mallow known to children as "cheeses" (*Malva rotundifolia*) can be cooked as greens. The round flat fruits or "cheeses" are good to eat raw.

Along the roadsides we see chicory or blue sailors (*Chichorium intybus*), recognizable by its sky-blue strap-petaled flowers. The young



Wild Lettuce



Chickweed

plants are sometimes cooked and the roots can be used as a vegetable, although they are more commonly used as a substitute for coffee or an adulterant in coffee.

Wild lettuce (*Lactuca scariola*), when young, can be used as a salad plant or a pot herb. It is said that common chickweed (*Stellaria media*) makes good greens—perhaps that would be one way to get rid of it! *Rumex acetosella*, Sheep sorrel or "sour grass" has an arrowhead-like leaf very sour to the taste. Most children enjoy eating these leaves, and they are sometimes used in salads. My grandmother used to tell of making pie from the leaves, saying that it was as good as rhubarb pie. Even Russian thistle can be cooked when very young, and is said to be very palatable.

Many other plants can be cooked as greens, but the above are very common and are familiar to many of us as weeds. Many persons who do not



Common Plantain,
Plantago.



Purslane, *Portulaca*.
Drawings by
Lorene Smith.



Common Mallow,
Malva.

like native greens feel this way because those they tasted were either too old to begin with or were overcooked after they reached the kitchen. They are certainly as palatable as our garden greens when taken very young and properly cooked.

In mentioning edible plants, we should not forget the mints which are so nice for seasoning and sauces. They occur along streams, and even though the stream may be intermittent, the mint will thrive and provide tasty leaves all summer.

Many edible plants which would not appeal to our conventionalized tastes were a part of the stable diet of the Indians. These plants interest me as a potential food supply which could be used in time of necessity; actually, there are many of them which have kept lost travelers from starvation in times past.

In addition to all the plants previously mentioned, the Indians used such fruits as the hackberry (*Celtis occidentalis*). While we may enjoy nibbling on the thin sugary flesh of these berries, we would hardly think

it worthwhile to utilize them as an important part of our diet. Indians, however, ground seeds and all and used the resulting paste alone or with meat. They also utilized our native acorns, leaching them in various ways to remove the extremely bitter flavor most of them have. They used juniper berries, ground and eaten in mush; prickly pear fruits; pods and flowers of pink locust (*Robinia new-mexicana*), species of currants which we would consider insipid and not worth bothering with; hawthorns; yucca pods; and indeed, any fruit that experience had shown could be consumed without disastrous effects.

The flesh of prickly pear was skinned to remove the thorns and then used as food. It has been reported that settlers in some of the dry parts of this country have followed this example. In some sections, we make use of yucca pods (*Yucca baccata*) which are said to make a pie similar to apple pie. The Indians not only ate the pods of this species which ranges into southern Colorado, but they also used the pods of *Yucca glauca* which is very widespread in its distribution. They ate the buds of many yucca species.

Nearly all grass seeds which occurred in any quantity and many wild flower seeds were ground into meal for mush or bread. The seeds of *Amaranthus* and *Chenopodium* were very commonly used. Sunflower seeds were very important. These are seeds which any small boy can tell you are very worthwhile eating—a bit of trouble to remove the hull, but the kernel is sweet and delicious. Among the grasses which provided abundant seeds of a fair size were species of *Sporobolus* (dropseed); *Oryzopsis* (Indian millet), a bunch grass with an attractive spreading inflorescence; *Bromus* (wild oats);

Annual Sunflower, Helianthus.
Photo by Chas. J. Ott.



Muhlenbergia (muhly), ordinarily with small but very abundant seeds; *Elymus* (wild rye); *Cinna* (wood-reed); *Festuca* (fescue); *Glyceria* (manna grass); *Hordeum* (wild barley); *Agrostis* (bentgrass, redtop); *Echinochloa* (cockspur, barnyard grass); *Eragrostis* (lovegrass); and *Panicum capillare* (witch grass).

Edible roots were important to the Indians. The wild onion (*Allium cernuum*) which most of us recognize because of its typical onion odor was eaten raw, used in soups and gravies,

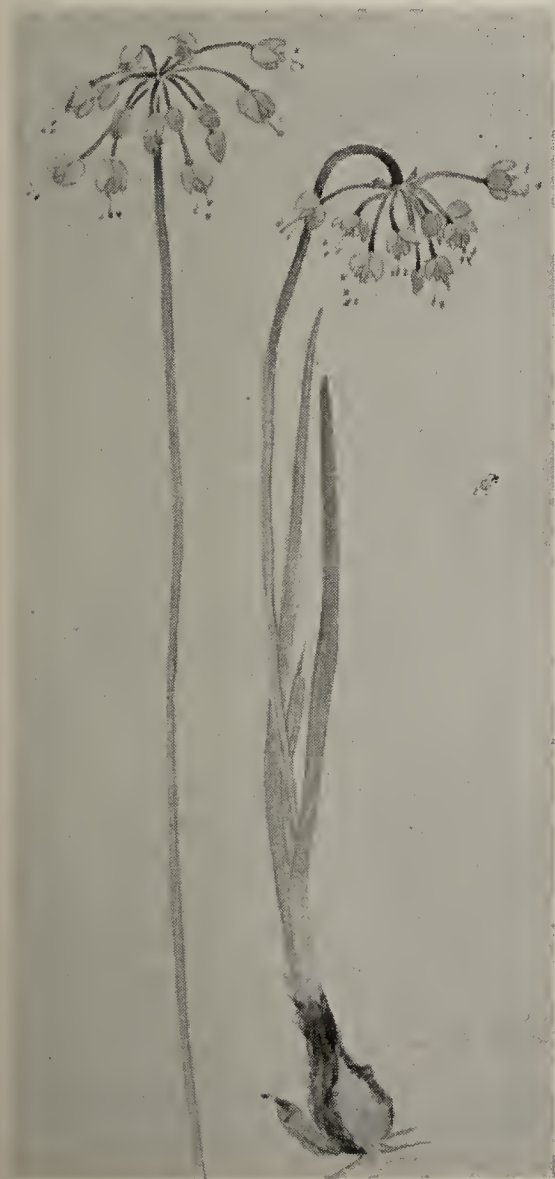
and dried for winter use. They ate the roots of our common low sedge (*Cyperus inflexus*). These roots are quite sweet and are good "nibbling material" along the trail. The little spring beauty, *Claytonia* spp., provided an edible bulb. The roots of arrowhead (*Sagittaria latifolia*) and Cat-tail (*Typha latifolia*) also figured in the diet of the Indians. I hesitate to mention that the root of *Calochortus*, the Sego lily or mariposa, was also eaten—these are far too beautiful to destroy in this way unless it is a case of extreme emergency.

In times of stress, bark of trees was a part of the Indian diet. The inner bark of Ponderosa pine, of willow, and no doubt of other trees, was pounded and eaten and did provide a certain amount of nourishment.

Sumac berries were steeped in water to make a pleasing sour beverage; and teas of various sorts were made from many leaves. Often, however, these were taken for their supposed medicinal value rather than as a beverage. Douglas fir needles were used for a tea which you might care to sample sometime.

Of course there are many more edible plants than those mentioned here, and many more ways of using the ones that are discussed. For those interested in pursuing the subject further, there are a number of interesting books available on edible wild plants, and the anthropological literature is full of references to plant uses by primitive peoples.

It is my hope that perhaps this has recalled to someone's mind a pleasant half-forgotten experience with plants; or that perhaps someone hiking through the country or walking along a mountain trail may enjoy himself more because of what he has read here.



Wild Onion, *Allium*. From painting by Emma Ervin.

THE NATURE AND USES OF PEAT MOSS

By JOHN W. DUNFIELD

Northern Peat Moss Co.

THE objective of every good gardener is to have plants grow and thrive well in the allotted garden area with the least possible care and expense. To accomplish this, every one knows that the garden soil must be rich and fertile . . . in other words, the soil must be "Good Earth" . . . and must be maintained as such.

More and more gardeners are using peat moss in their gardening to achieve the "Good Earth" in their particular garden soils. The essence of a "Good Earth" policy is to have and maintain the organic content in the soil. Sphagnum peat moss is one of the finest sources of organic matter obtainable.

Organic matter in the soil serves two primary purposes:

Firstly, the very necessary humus is derived from the organic matter. The organic matter is the prime source of nutriment for the soil bacteria. Without organic matter there can be little bacteria life in the soil. Without bacteria life, the soil is dead and barren. So organic matter is required in the soil to provide the fitting environment for the micro-organisms and bacteria. This function of organic matter can be called a bio-chemical action in the soil.

Now the second purpose of organic matter in the soil can be called a purely physical one. This physical function is equally as important as the above mentioned bio-chemical function. The physical service of organic matter is one of conditioning the soil to the best advantage for plant growth.

Peat moss, as the gardeners' source of organic matter, excellently fulfills these two primary purposes.

Many other vegetable matters serve the purpose of the bio-chemical action in providing a source of humus—such materials as manures, green manures, leaf mold, and compost. But none of these other vegetable materials can equal peat moss in the physical function of conditioning the soil. So we might say that the great advantage of peat moss is in the physical aspects of soil conditioning.

The initial characteristic, of importance to the gardener, is the extremely high moisture absorptive factor of sphagnum peat moss. It will absorb up to 18 times its own weight in water. When peat moss is thoroughly mixed with the soil it absorbs and stores the useful soil moisture in that part of the soil where the plant roots are growing. In doing so, the peat moss retains the water in which is contained the valuable plant foods that are so vital to the health of the plants. This has the effect of providing readily available moisture and plant food continually to the roots.

This feature of peat moss is particularly valuable in light, sandy or gravel soils. In this type of soil after rainfall or watering the soil moisture is rapidly drained away . . . carrying the valuable plant foods with it. The addition of organic matter to sandy soils then tends to bind up the loose soil and provide reservoirs to catch and retain the moisture.

In heavy clay soils, peat moss has the opposite effect. It loosens up the clay . . . making it much more porous and susceptible to the passage of water and air. In clay soils, the particles of clay are so closely packed together that free passage of water and air is greatly retarded if not pre-

vented altogether. The soil must have a circulation of air or it becomes sour. As well, the plant roots need air. Clay soils when mixed with ample peat moss become fine loose loams. In garden soils that are extremely heavy clay it is wise to mix in some sand as well as peat moss. This aids in the drainage of the soil. Coal ashes or cinders will do best instead if sand is not available.

Peat moss is ideal as a carrier for the particular brand of chemical fertilizer or organic fertilizer that the gardener may use. Particularly for work around shrubs, bushes, for transplanting or for bulbs. The peat moss acts as storehouse for the moisture and the plant foods dissolved therein. The value of the plant foods is therefore greatly enhanced as they are not allowed to seep away and go to waste.

Anyone who has used compost in the garden realizes that he can seldom produce enough to properly enrich the soil. For this reason many good gardeners mix one part of their prepared compost with three to four parts of peat moss before spreading or mixing into the soil. By so doing, an immediate response is obtained from the compost bacteria and a long drawn out but continued action is assured from the slower decomposition of the peat moss and its soil conditioning properties in the meantime.

Another decided advantage of peat moss as a source of organic matter when compared with other forms of matter is that it is entirely **WEED FREE**. How many times have you heard gardeners complain that the manures or nice black top soil that they have purchased have brought forth in their gardens a lush crop of weeds. We get plenty of weeds anyway without buying them in our garden materials. By using peat moss and a good chemical fertilizer, the

gardener knows that he is not planting weeds, or introducing weeds to his soil.

Always mix peat moss thoroughly into the soil whether you are preparing a new lawn bed, a garden plot, or potting soil. This will ensure a well mixed and homogeneous soil. The exception of course to this rule is in mulching. For mulching purposes peat moss is unexcelled because of its high insulating quality.

Another point to remember is that peat moss is *not* a fertilizer. True, it has a source of organic nitrogen which over a period of years becomes available to the plants but this is very slow acting. So a well balanced fertilizer must always be used. If anything, a fertilizer with a slightly higher nitrogen content than usual is often practiced by some gardeners. Fresh peat moss in its initial stages of decomposition in the soil utilizes a slight amount of the available nitrogen.

A final point to keep in mind when using peat moss is to thoroughly wet the peat moss before using. Put the peat moss into the soil wet. When you obtain a bale of peat moss from your garden store it is practically bone dry. Because the peat is compressed many times to compact it into the handy bale size, the peat moss might often be lumpy . . . that is it tends to stick together in lumps. Any lumps will immediately break up when the peat moss is properly wetted down. Further, wet peat moss is much easier to work with than dry—it mixes into the soil much better.

The proper and ample use of sphagnum peat moss will aid greatly in achieving and maintaining a rich fertile garden soil. Having a "Good Earth" practice in your gardening is the prime step towards a "Green Thumb."







Rustic shelter and fireplace built by O. E. Haffner. Photo by Earl Davis.

GARDEN SHELTERS

Gardens should be designed for living. They should express much of the personality of the owners. They should be planned to accommodate the

hobbies and habits of each member of the family. They should be suitably screened so that they may be enjoyed in privacy.



Attractive lattice shelter at home of B. C. Essig, 350 Franklin, Denver.

Their usefulness may often be much increased by the addition of an appropriate shelter—a shelter from the hot sun or summer showers, a place to sit and eat or talk or loaf. This

shelter should be planned to fit in with the design of the garden, and it may add much to the interest with its properly designed architectural features.

*Garden shelter that fits, at home of Robert Bosworth, 314 Franklin.
Photos by Edgar E. Warren.*





Above and on preceding two pages from the garden of W. C. Sterne, 1198 S. Franklin, Denver. Photos by Edgar E. Warren.

It may be a simple awning over a platform, a rustic pergola or an elaborate little house. It should be conveniently located and built of appropriate material.

Here are illustrated some of the ef-

fective garden shelters that have been created by Denver gardeners. Other gardeners may get some ideas from these pictures which might be helpful in planning a shelter for their own garden.

Convenient and attractive shelter attached to house.





*Simple and efficient garden shelter in garden of Dr. John C. Long,
1215 Monaco Blvd. Photo by Edger E. Warren.*

*Very attractive attached garden shelter at home of John G. Gates,
300 S. York. Photo by Earl Davis.*



CONSIDERING LILIES

Their Culture

MILDRED STEELE

LILIES have been garden favorites for untold centuries. During these countless eons, the original forms have changed but little. Such perfection could scarcely be improved upon. Horticulturists have aided the culture of lilies by carefully selecting seedlings that seemed more resistant to disease, and more adaptable to garden conditions. Also, the horticulturist has produced many fine hybrids. As to their virtues, compared to the species forms it is a moot question.

Lilies have been written about from the earliest recorded history, 2000 B.C., down through the ages in poetry and in prose. With the coming of the Christian era, the Madonna lily became a symbol of chastity, and was honored in works of sacred art. Today, the *Lilium longiflorum* is considered the lily for Easter, chiefly due to its convenient time of blooming in the greenhouse.

The distribution of lilies is widespread, but all are found in the Northern Hemisphere, and mostly in the temperate zone. Those coming from the tropics are from the cool highlands. None are from the desert regions. The "whys" of their distribution defy reason. Is it not strange that the very prolific and hardy Regal lily was found in one small, remote mountain gorge in China, and nowhere else? Practically all the trumpet lilies have originated in East Asia, except the Madonna lily, the oldest known to man, and there is no record of its origin. Recently it has been located in the wild, in the Beirut river valley, between Damascus and Beirut. It was found growing in rugged limestone cliffs in rock crevices.

Again, the *Lilium Browni*, which is

also a trumpet lily, largely cultivated in England, was brought out of China in 1835, by a sea captain, but has never been seen in its native habitat since.

Generally in the wild, lilies grow in association with other plants. In the Eastern and West Coast woodlands, the dwarf rhododendrons and azaleas provide the necessary soil shade for them, and support for their heavy flowering spikes. Not less occasionally will one see a handsome group of lilies blooming in a bed of briars or blackberry thicket. Most lilies prefer open woodland conditions, which means variable sun and shade, a light ground cover, and humus in the top soil. It is an occasional lily that seems to prefer a bog, but by careful observation one generally learns that the bulb is dry part of the year. The Madonnas and the Sargent lilies both have natural drought part of the year, and thrive best in places where drainage is thorough.

Ways of adjusting lilies to the individual garden is problematical and requires considerable ingenuity and thought. Sometimes one must make numerous attempts before the right conditions are found. One cannot always change their shade and drainage conditions, so it is not wise to buy expensive bulbs until the conditions have been studied. It is wise to invest in a good lily book before becoming a "fancier" and follow the advice given as well as one can. Also, study the planting instructions that the better nurseries send out with the bulbs.

One must allow plenty of time for the new bulbs to become established before expecting them to flower; often 3 to 5 years, and frequently there is

no top growth the first year. Hence, weeding must be done by hand, with the utmost care, because breaking off the first tender shoots or stems will weaken the bulb, and more frequently than not, the bulb will die. Too much water is dangerous for new bulbs, as it causes these same tender shoots to "damp off", resulting in death for the bulb also. Staking and labeling each new planting is essential for aiding the memory and avoiding needless disaster. It is indeed gratifying to have a choice and long-anticipated lily come into flower after so long a wait, and careful nursing.

Soil for lilies requires careful preparation. It has been said that any soil suitable for potatoes is good for lilies. That is not such bad advice as a generalization, and for lilies of easy culture. For the more difficult sorts, it is essential to have an adequate stock pile of peat, granite sand or river sand, limestone chips, pine needles or excelsior, and bone meal. Each planting requires its special formula, and here again, a lily book will be of great worth. For the beginner, it would be well to start with lily varieties whose requirements resemble one's own garden conditions.

When new bulbs come from the nursery, they must be planted with all haste, as the longer a bulb is out of the soil, the less are its chances for survival. The enclosed planting directions must be carefully followed. Do not use commercial fertilizer (except bone meal) or animal fertilizer in the planting. Experiments are being made with commercial fertilizers, but the results are not yet conclusive. Since all lily plantings require a mulch of one kind or another, it is a major problem that needs careful attention. I have personally experimented with wood shavings as a mulch. In some plantings it is very successful with peat. Planting depths are also of

greatest importance, and are generally specified on the enclosed directions sheet. Small bulbs are planted less deep than large ones. Stem rooting bulbs are the most deeply planted, while those with basal roots only are in shallow soil, with the Candidum and Testaceum being the most shallow planting of all, approximately 3" deep.

Time for planting lilies is in the fall, as soon as the flowering spikes have ripened. Candidum and Testaceum are planted in August or early September. Those lilies that flower very late are frequently kept in cold storage during the winter, and sold the following spring. These bulbs seldom flower the first year.

Diseases in lilies are a more than considerable problem. Too much for the casual gardener to worry about. It is wise to buy lily bulbs only from a specialist, not just to have them correctly named, but to obtain disease-free bulbs in the first place. Those lilies extremely susceptible to disease often flower beautifully for a season or two and then disappear. One just replaces them and enjoys them for their short duration.

When one cuts lilies, at least $\frac{2}{3}$ of the stem should be left for ripening the bulb. Only lilies that propagate themselves rapidly should be cut, others should be left to enjoy in the garden. Lilies are at their best in a group planting with a background of evergreens, thick shrubs or a hedge. A preferable location is one that will allow plenty of water while the bulbs are preparing to bloom, and likewise endure the sparse watering necessary when the bulbs are ripening. When using lilies in the border, the bulbs have a tendency to deteriorate because of excessive water. It is therefore advisable to have a special bed to propagate replacement stock.

A SILVERY-GRAY GARDEN

By M. WALTER PESMAN

WHAT slaves we are— of tradition and of the “Joneses”!

Just because the green garden is the accepted thing, and has a long lineage, we all make dutiful imitations of the green garden that fits Great Britain, that fits New England, and much of the so-called cultured world.

And in the meantime — nature around us uses its own color scheme, often quite different from the lush-green of Devonshire and the Adirondacks. Don't we see it?

Yes and no. Being brought up with the idea that foliage is yellowish green, and that snow is white, we conceive them as such, and if we are

painters, we paint them as such.

Until—until a child or an insurgent artist paints snow a deep-blue, and trees a silvery-grey. Then we are enabled to notice these things ourselves. We have had our eyes opened.

Some day I hope to have the opportunity to “do a silvery garden.” Contrasted with our Colorado sky, and in keeping with a number of our native plants, it will be recognized as an attempt to make a Rocky Mountain garden fit the Rocky Mountain landscape as well as the Rocky Mountain climate.

No, it won't consist of native plants only. A Russian Olive and a Silver Poplar look just as much “at home”

The J. J. Waring garden at 910 Gaylord. Here is a blending of the pastel green of the residence with the silver of Russianolives that is responsible for much of the restful atmosphere.





Dr. Proctor's garden in Santa Fe carries out the tradition of the Southwest, featuring the blue-green of pinyon Pine, with grey background for brilliant flowers, reflected in the blue pool.

here as a Silver Spruce or a silvery Sagebrush, even though they did not originate in this particular region. Plants—and people—may fit and belong in Colorado while hailing from similar places, or even from dissimilar spots, having the—shall we say—the Rocky Mountain instinct?

Will the silvery-gray garden be monotonous? Not the way I envision it, no more than the time-honored green garden is monotonous. Gray in one case, like green in the other, is merely the backdrop, the atmosphere of the scene.

As the season progresses the other color accents will change; all, however, will be enhanced by the gray setting.

In early spring our rose pinks could wish for no better background; a little later we may find scarlets and yellows in contrast with the blue-

greens and grays; still later, when hot summer days bid us to relax and find the pleasant shade, what more soothing color can you ask for than blue flowers against silvery foliage.

Fall is not hampered by any summer precedent, it uses its own palette, irrespectively. Certainly our silvery-gray garden will not interfere with nature's self-imposed color scheme, and will admit plenty of good fall color. Yellow, of course (or should we say golden?), is predominant in Colorado, and may provide the proper psychology in the "Silver-and-Gold" state.

What Material to Use?

As has been intimated above, we can hardly think of this type of garden without the use of Russian Olives. Immediately the Waring garden at Ninth and Gaylord Streets comes to

mind. Here is a blending of the pastel green of the residence with the silver of Russian Olives that is responsible for much of the atmosphere of the place—unescapable atmosphere!

Almost breath-taking in beauty is Russian Olive in the latter part of May, with its delicate silvery leaves. If you want a spring effect in your garden, at that time unforgettable, plant a good-sized group of Oriental Poppies where they'll show in front of Russian Olive. (It might be just as well not to feature that spot later in the season: the foliage of Oriental Poppies a month or two later is nothing to boast about.)

Shrubs with silvery foliage are *Buffalo Berry* (*Shepherdia argentea*) and *Sea Buckthorn* (*Hippophae rhamnoides*, and others). Both are best in youth, both have red berries, at least the female individuals, where they can be pollinated by the male flowers. A less well-known Buffalo Berry is the native *Russet Buffalo Berry* (*Shepherdia canadensis*), common on north slopes in the montane zone. It is a low shrub, almost a ground cover, that requires a shady spot.

Almost its exact opposite in culture requirements is another gray-foliage plant of the same size: *Leadplant* *Amorpha*, *Amorpha canescens*. It is good for dry, hot places, and it is in such locations that its violet blue flowers in June show up to their best advantage.

The character of its foliage immediately makes us think of a host of other gray-leaved native plants. Foremost among them is, of course, our much-glorified *Western Sagebrush*, *Artemisia tridentata*; poets and songwriters get emotional about it, legend and literature have developed about it. Can we use it in the garden?

The "wild garden" certainly should feature it; and I am sure that it will be used in the humanized type of garden as soon as some enterprising nurseryman makes it available. Perhaps all it needs is a landscape architect to act as its publicity agent. Cultivated and properly cared for, it is apt to look like a respectable member of our shrub society. Incidentally, Standardized Plant Names calls it Big Sagebrush: it does grow as high as twelve to fifteen feet in spots. Another name, commonly applied is the Black Sage.

Even more claim on garden recognition has the *Silver Sagebrush*, *Artemisia cana*, a beautiful silvery shrub, up to three feet.

Among the dozens of sagebrush species, called wormwood in the old country, others are worthy of cultivation. The low *Fringed Sagebrush*, *Artemisia frigida*, makes a neat silvery border, unique in its kind. It grows native in plains and mountains, and used to be considered a remedy for mountain fever by early pioneers.

Remember "Old Man"? It's another artemisia, *A. abrotanum*, and you'll find it in many an old-fashioned garden, often as a low hedge; children love to crush its leaves for the pungent odor.

Silverking Sagebrush, is *Artemisia albula*, commonly used in the perennial border for its silvery color, as is the *Ghostplant Wormwood*, *Artemisia lactiflora*, for its fragrant masses of white flowerheads in September. Weedy? Yes, or shall we say, self-reliant.

And now, as I review in my mind all the grayish native shrubs available for this garden type, I am overwhelmed: there are so many of them. There is *Bush Cinquefoil*, *Potentilla fruticosa* (Gold Drop is a specially

fine variety), there is *Bush Rockspirea*, *Holodiscus dumosus*, with its creamy or pinkish flowers, *Apache-plume*, *Fallugia paradoxa*; *Cliffrose*, *Cowania stansburyana*; *Antelope Bitterbrush*, *Purshia tridentata*; *Fendlerbush*, *Fendlera rupicola*, a hardy shrub of the Mockorange group; and there is that choice *Tansybush*, or Desert-sweet, *Chamaebatiaria foliosa*, with its fernlike leaves and beautiful white blossoms. All these are really choice flowering shrubs.

Less choice are the *Mountainmahoganies*, *Cercocarpus*, and the gray willows, such as *Salix exigua*, the *Coyote Willow*, and *Salix irrorata*, the *Bluestem Willow* (an excellent "pusseywillow").

Enough to show that the silvery-gray garden is a very real possibility, not a wild artist's dream. Some enterprising garden lover, with enough pioneering spirit and passion for the West, is going to venture upon it. He or she will make mistakes in judgment. Some plants will have to be kept in check, others will need

special "petting". The proper "ecology" will have to be sensed.

What a restful garden it will be, with the silvery blue spruce and Silver Cedar as a background, Russian Olives in group formation, masses of purple-blossomed Persian *Nepeta* (*Nepeta mussini*) and of *Woolly Speedwell*, *Veronica incana*, in summer.

What new color combinations it will present! What new problems it will present!

Shall we use a gray groundcover instead of bluegrass? Rocky Mountain Pussytoes for instance? Or shall we use green as a "foil" to show off the gray symphony to better advantage?

When we get that Rocky Mountain Botanical Garden in running order, more than likely a collection of grays and silvers will receive consideration. Before long this region will make its contribution to Garden Art, comparable to that made by Italy, by England, by the Moors of Spain.

There is a luminous quality about this sunken garden path of the Runnette garden at 110 S. Humboldt. Blue morning glories are showing their best against Silverlace Vine, and the Japanese Anemones are enhanced by a background of Snow-in-summer. Photos by author.



THE HOME GREENHOUSE

By ERNEST CHABOT

Author of "Greenhouse Gardening for Everyone"

NO LONGER is a home greenhouse considered a luxury. Now for prices that start at less than \$300, anyone can put up a practical, small, prefabricated glass garden. . . . One that will hold an amazing quantity of plants and flowers to bring joy into the home long after snow flies. Several styles and sizes of greenhouses and lean-tos are available.

A small home greenhouse in the clear sunshiny air of Colorado is especially appropriate. The commercial growers have demonstrated the advantages found here by their world famous carnations. The home grower can also take advantage of these favor-

able growing conditions by growing a wide variety of ornamental and useful plants.

The Heating

Heat for the home greenhouse is a simple matter with the modern equipment available. A new closed flame burner for natural gas provides clean, inexpensive heat. A flue carries off the products of combustion. This heater can also be used with bottled gas, where 100% natural gas is not available. Of course, artificial or mixed gas should never be used in any greenhouse since the fumes are death to plant life. Frequently,

*Appropriately placed small greenhouse at home of Hudson Moore, Jr.,
2201 E. Alemeda Ave.*



the house heating system can be extended for the greenhouse regardless if it is from a steam, hot water, or hot air plant. There are also oil burning, electric, and open flame natural gas heaters. All may be thermostatically controlled, and made especially for greenhouse heating.

What to Grow

A greenhouse is not a hothouse as many of the uninitiated seem to imagine. Most of the finest flowers that grow do best at a night temperature of 45° to 50° . These include such delightful things as anemones, asters, marguerites, carnations, cyclamen, snapdragons, camellias, stock, sweet peas; we could go on and on. Of course, if you are fond of gerbera, gloxinias, poinsettias, gardenias, bougainvillea or potted roses, a night temperature of 60° should be maintained. Then, of course, there are orchids, and if you like them, don't let that old notion that they are difficult or too costly stop you from growing them. Orchids are fairly easy and the plants are not so very expensive in comparison with their yield, that is, unless you want to go in for the rare and unusual ones. There are companies that make up excellent collections that can be bought for as little as \$50 to \$100.

Unusual, exotic plants are another group that provide a fascinating hobby. There is just no end to the possibilities. You have limitless numbers of cacti, succulents, and delightful flowering bulb plants from Africa, Asia, South America, Japan and our own south and west. There are also rare and beautiful tropical plants.

Vegetables

In addition to flowers and ornamental plants, you can have fresh vegetables, too. Of course, in a small greenhouse, you can't grow every-

thing, but there are certain vegetables that do well which you might like to try. Fresh greens from your own greenhouse are grand to have to garnish your table during the winter. Crisp lettuce, radishes, Swiss chard, chives, and parsley might be grown profitably in an unused corner. You could also grow tomatoes, cucumbers and melons in the spring, summer and fall. They reach an excellent height of perfection under glass. Of course, to grow these three requires a warm temperature— 70° at night—so they are hardly profitable in the cold days of winter.

Herbs are fun, too, and take a comparatively small amount of space. Try chives, basil, tansy, marjoram, rue and others.

In the springtime, the seedlings that you raise for your outdoor garden are one of the most profitable things you do in a small greenhouse. Plants for the vegetable garden such as cabbages, cauliflower, tomatoes, egg plant, peppers, to say nothing of plants for your flower beds and borders; marigolds, zinnias, petunias, cornflowers, verbena, nierembergia, begonias, lobelia and many others.

Health in the Sunshine

In addition to the fun with flowers you have in the home greenhouse, there is the health side. . . . The escape from the care and tension of regular routine that gardening under glass brings. It provides that change we all need especially during those bleak days when we feel winter will never end, and most of our time is spent indoors. It is surprising how taut nerves seem to loosen up almost magically, for there is that certain something that gardening in the warm sunshine does to set you up and keep you fit that nothing else can. All that is needed to make it a reality, is a winter garden under glass.

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New Books Received During Month of June

(Most of these are old and are now out of print.)

Abercrombie's Practical Gardener, by John Abercrombie, London, 1834.

The fly-leaf reads, "Designed for gentlemen who manage their own gardens."

The Floral Offering—The Language and Poetry of Flowers, by Henrietta Dumont, 1856.

You may not put this book aside once you pick it up. It also contains colored illustrations from original drawings.

The Primulas of Europe, by John MacWatt.

In this book particular points of cultivation are dealt with and one may, with a very slight expenditure of time and care, obtain an immense amount of enjoyment, and, "speaking

from my own experience", the writer says, "the more one becomes acquainted with this family, the more one's interest grows until it is a delight to acquire additions to the collection and win success with some kind which has erstwhile taxed both skill and patience."

Alpine Flowers and Gardens, painted and described by G. Flemwell. Preface by Henry Correvon in his native tongue, Geneva, 1909.

Memoirs of the Botanic Garden at Chelsea, by Henry Field and R. H. Semple, M.D., with illustrations, plans of the gardens and a catalogue of the plants.

Where Did Your Garden Grow? by Jannette May Lucas.

Reading this book is like making an exciting voyage of discovery for boys and girls as well as for their parents. Do you, boys and girls, ever stop to think that all the flowers growing in your garden are wild flowers? The author tells of Tulips, Lilies, Daffodils, Zinnias and Gladiolas and their travels from China, Persia, Turkey, Europe, Africa, Mexico, South America and even those from our own United States, to the famous botanical gardens of Europe and eventually to our gardens of today. Illustrated fully with maps, drawings and decorations in color and in black and white.

The African Violet, by Helen Wilson.

We now have two copies of the story of America's no. 1 houseplant with complete culture and classification.

The Voice of the Garden, by Abram Linwood Urban.

It must be true, if our faith in Christ is true, that the only cure of every human ill is spiritual. This book will help to satisfy man's spiritual hunger. "May this book bring many to grow gardens in their homes and hearts".

Poisonous Plants in Field and Garden, by the Rev. Professor G. Henslow.

We have received many calls for a book of this kind.

Iris Culture, by Pese and Spender.

Amateurs have often expressed the wish for a book on Iris which they can easily understand and which is not too full of purely botanical facts. Here is the book for them. Of course, if they wish to study further, the great work on Iris of the large, well known monograph by W. R. Dykes, *The Genus Iris*.

Farrer's Last Journey, by E. H. M. Cox.

Few botanical travellers or horticultural writers have a larger following than has the late Reginald Farrer who died in 1920 while collecting plants in the Burmese Alps. His two books on his Chinese expedition, "On the Eaves of the World", and "The Rainbow Bridge", are now classics of their kind.

A trip was decided upon in five minutes and in fifteen minutes more it was to be somewhere in Upper Burma, but with only a vague idea as to the exact place. The author says that they just bolted from England on the first available steamer, only too thankful to be off to some country where there were high hills yet to be explored.

Mr. Cox, who was with Farrer in his last journey, describes the wonderful land which they searched for plant treasures. The horticultural interest of Farrer's journey will appeal to keen gardeners, while those who have fallen under the spell of Farrer's personal charm, which pervades all his writings, will find added attraction in the new facts quoted from his letters.

We have received many more books this month which will be listed in the August issue of the Green Thumb.

Helen Fowler.

AUCTION A SUCCESS

THE auction of "Antiques and Horribles" which was held on May 20th marked a significant milestone in the development of the Colorado Forestry and Horticulture Association. At final reckoning \$901.37 had been received from this event. This will help to balance our badly unbalanced budget and will encourage us to increase our many projects for the advancement of horticulture in Colorado and the Rocky Mountain area.

Many of the older horticultural associations and garden centers in other cities have adopted similar events to supplement their income from memberships. Even though we found it necessary to raise the minimum membership rate to \$3.00 beginning July 1st, this will not cover the cost of the services that we have been giving. Just the publication of "The Green Thumb" will exceed this considerably.

Some older communities have developed this annual sale to give them an income of many thousands of dollars annually. It seems to be one of the comparatively painless methods of acquiring the necessary funds to operate this worthy work. Plans are already going forward for a bigger and better sales in the future sponsored by us.

Of course an affair like this does not run itself. There must be a few who take the responsibility for planning, arranging and advertising. Mrs. Alexander Barbour accepted the position of chairman of this auction and worked hard and long to make the necessary arrangements and to interest the necessary helpers. Mrs. George Garrey, Mrs. Everett Parker, Mrs. Karl Arndt, Mrs. Richard Davis and many, many others, ably assisted Mrs. Barbour in this work.

John Swingle, (who should now rate the title of "Colonel") made a most valuable contribution by his effective auctioneering of the donated material as well as his solicitation of donations. Richard Osborne also assisted in the auctioneering. Mrs. Philip Emery and Mrs. Paul Hastings handled the clerical and financial end. Many good friends of the Association looked around their houses for really fine and valuable items that would bring good prices at the sale. Without the great generosity of all these people the auction would never have been possible. We cannot thank these people enough for all their kindness and generosity and we also feel sure that those who bought at the sale are also very grateful to them.



HORTICULTURAL TERMS EXPLAINED

Repens—creeping and rooting on the surface of the ground—Veronica repens.

Serrate—toothed like a saw as at the edge of an apple leaf. Some leaves are doubly serrated as the elder.

Saxatils—inhabiting rocks—Alyssum saxatile compactum niger-black.

Tunicated—having broad overlapping scales as the lily.

H.F.

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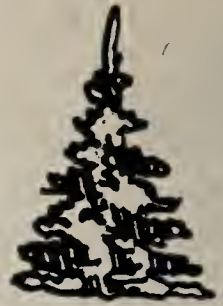
Perennials

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JULY GARDENING

JULY sees the garden in the stage just beyond the grand spring rush of flowering shrubs and early perennials. There may be a slowup as the weather becomes hotter and drier. Watch the watering especially, encouraging the roots to go deep by thorough but infrequent applications. Some kind of soil-soaker is good to allow the water to run in a small stream for a long time without washing.

Right after blooming is the proper time to do the necessary pruning on most ornamental shrubs. Avoid taking out ALL the lower twigs or shearing off the top. Cutting out a few large, overgrown stems each year will assure a naturally shaped plant for many years.

Frequent and shallow cultivation will keep down the weeds so that they can not interfere with the growth of the desirable plants. Mulching will do this same job about as effectively and will give added benefits of retaining the soil moisture and furnishing nourishment.

Use the new weed killers with extreme caution as a minute amount coming in contact with certain susceptible plants can do severe damage.

The biggest garden job in July is usually pest control. All-purpose sprays and dusts are fine for the really busy or lazy gardener, but all the real gardeners will want to learn how to recognize the damage done by the ordinary insects and what the best control is for them. Unnecessary sprays may kill many beneficial predators of the harmful insects. There are many new insecticides on the market now which are very effective when properly used but they may do much damage if not used in the right way.

If you have not already started a garden diary, do so at once, now that it is fresh in your mind. All the little improvements that would be desirable in your garden, next fall or spring, at planting time you will have forgotten. There may be clashing color combinations, or tall plants hiding short ones or rampant growers crowding out the nicer but weaker things. Make a note now of all these desirable improvements.

Picture on rear cover of the native Soapweed, Yucca glauca.



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The Green Thumb

COLORADO'S GARDEN MAGAZINE



OUTDOOR EDUCATION

CONSIDERING LILIES

GARDEN ACCESSORIES

GOOD OUTDOOR HOUSEKEEPING

WHAT IT MEANS

We would not throw trash on our living room rug nor carve our names on the dining table top. We should learn to use these same good manners when we are in the out-of-doors. We should burn our burnable trash and bury things like bottles and cans. We should respect the native growing things as we would our valued furniture at home. We should always clean up our picnic and camp sites as we would our own rooms in town. We should learn to respect private fences and livestock as we would like to have people respect our own lawns and gardens.

WHY

Because much of our pleasure from the out-of-doors comes from its fresh wildness we should leave this wildness with as few signs of human use as possible so that others may get this same enjoyment. Most of us live in Colorado because we like it here. We like to live where we can go to the mountains on week-ends; we enjoy the mountains, trees, rocks, and flowers as they have been for centuries. As Colorado can never compete with many of the older Eastern states in agriculture or industry we should learn to appreciate the advantages that we have, which are not enjoyed by these Eastern states—the recreational attractions of our mountain areas. Then we should preserve these for our own pleasure and for the income which is derived from the visitor who is attracted here from less beautiful states.

HOW

We can keep these beautiful wild places enjoyable if we will always remember that others will come after us. We must leave no material foreign to the country lying around, nor should we destroy or mar any of the existing natural plants, rocks or animals. We should designate a place in our car and in our outing clothing to collect stray papers until they can be burned. If we find papers, cans and other foreign material left by some careless person in our favorite spot, we should dispose of them and leave the place as we would like to find it.

WHERE

The outdoor good housekeeping should be practiced while in the National Parks and Forests, while in the Municipal Mountain Parks, while in the City Parks and along all roads and streets. Yes, there are men hired to clean our streets, but much of this material thrown down to blow around is absolutely unnecessary, costs a huge amount to pick up and it gives a seedy appearance to the community as well.

WHO

We need first to practice these good habits ourselves and then teach them to our children and our friends. We should never let someone riding in our car throw paper, cans or other waste material out the car window and never leave a picnic or camp site without being sure that everything is in as good condition (or a little better), than the way we found it.

The Green Thumb

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AUGUST, 1950

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If you are interested in mountain wild flower trips during the summer call TAbor 3410 or PEarl 5565 for information.

Drawings on front and back covers by Mrs. Ella Brown.

Colorado Forestry and Horticulture Association

Organized in 1884

"To preserve the natural beauty of Colorado; to protect the forests; to encourage proper maintenance and additional planting of trees, shrubs and gardens; to make available correct information regarding forestry, horticultural practices and plants best suited to the climate; and to coordinate the knowledge and experience of foresters, horticulturists and gardeners for their mutual benefit."

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Your Plants Are Not on Vacation

It is quite natural for even good gardeners to relax a little in their gardening at this time of year. This is the vacation time, the weather is warm and we are inclined to become a little less enthusiastic about our garden work. Plants are still growing however, and must have some care or they may die or be so seriously set back that they will lose a year's normal growth.

Plants which were set out this spring need especial attention as their roots are not well enough established to stand protracted periods of neglect. Remember to water thoroughly so that there will be moist soil around the farthest roots. Check frequently for insect pests, as these pests prefer the little struggling plants that are just getting established. A light dressing of commercial or organic fertilizer may help now. Keep the weeds down so that they do not draw all the moisture from the soil around your valuable plants. Mulch to keep in the moisture.

As you are on your trips to the mountains you will see many plants that you would like to have in your garden. The inclination is to try to transplant them at this time. This is usually the poorest time to move plants as they are in full growth and the weather is hot. Many of these nice things can be obtained from members of the Colorado Nurserymen's Association, often as nursery grown plants and sometimes as collected. They have the experience to know when and how to move these plants so that they will live and grow. Often the wild plants are growing in such difficult soil that it is almost impossible to get a sufficient proportion of roots with them.

As you visit your neighbors' gardens notice how often fruit bearing shrubs and trees can be used for their ornamental value also in garden plantings. Make a note now of the nice plants and nice arrangements of plants that you see in others' gardens and see your nurseryman now about getting some of them for your garden.

COLORADO NURSERYMEN'S ASSOCIATION

See the February issue of the Green Thumb for list of members.

*Resolutions Passed by the***COLORADO-WYOMING
ACADEMY OF SCIENCE****THE CONSERVATION COMMITTEE**

In Business Session, May 13, 1950

RECOMMENDS that the Academy support the establishment and development of state park systems, and of botanical and scientific preserves, for the pleasure, benefit and profit of succeeding generations. Specifically: a grassland study area to be selected; the Pinon Pine area north of Fort Collins; and the White Rocks area near Boulder.

Recommends that the Academy support the endeavors of the Committee for Roadside Improvement and State Parks, operating under auspices of the Colorado Forestry and Horticulture Association, in their efforts to promote establishment and development of state parks and roadside improvements.

Recommends supporting a comprehensive study of our water resources, needs, and distribution rights, with impartial consideration given to both urban and agricultural needs, in the light of most efficient use of supplies available, and that specialists in all related fields be consulted as necessary.

Recommendation: In view of the current conflicting opinions and highly emotional atmosphere existing with respect to the proposed Echo Park Dam in the Dinosaur National Monument in Northwestern Colorado, and

since, except for the agricultural and engineering features, so little attention has been directed toward the long range effects of the proposed dam on the many factors involved, the Academy urges the Secretary of the Interior to consider the entire project also on the basis of its long-range biological, economic, social, and recreational aspects, and if necessary to delay development and construction until a comprehensive scientific investigation has been made.

Recommends that the Academy request each institution of higher education in Colorado and Wyoming to emphasize in every course possible the wise and coordinated use of all natural resources on which our civilization is based, and whenever possible to establish courses in the wise use of these resources.

Recommends that the Academy go on record as favoring the promotion of the greater integration of the various uses of our natural resources by acquainting the public with the multiple-use principle. To this end, for example, each institution of higher learning in the two States, could from time to time send a lecturer to other cooperating schools, to speak on the scientific basis of conservation, and on the importance of the wise use of natural resources to human welfare.



PRACTICES AND VALUES IN OUTDOOR EDUCATION

H. RAYMOND GREGG

Chief, Naturalist Division National Capital Parks

By Permission of the American Institute of Park Executives.

THE late Aldo Leopold considered that three cultural values flow to man from contact with nature. First, the opportunity to recreate for himself pioneer experience, described as "split-rail" value. Second, consciousness of human dependency in the soil-plant-animal-man food chain, however obscured by the middleman influence of modern industry and science. Third, the development of ethical restraints, expressed as sportsmanship in its best sense.

If we add to this credo the emotional value of esthetic enjoyment of nature's artistry and symbolism; and the physical-intellectual pursuit of nature-centered avocational or research interests, we have encompassed what nature has to contribute to culture.

Roberts Mann well expressed the first of these values, especially as related to city folks, as the "need for roots in the land". This involves physical contact with the land, appreciation and understanding of nature's creations and laws, and the opportunity to attain personal skills in the outdoors.

The character and significance of the water-soil-plant-animal-man relationship has impressed man only superficially and vaguely thus far. Were this not so, we would not possess unnecessarily depleted soil, water, forest, wildlife, and wilderness resources. True, we have become increasingly conscious of our needs and the sins from which they flow. But we grope feebly in half-light, because even the

experts understand imperfectly the complex interrelationships involved.

Sportsmanship is knowing the rules, perhaps even the reason for them, and in good spirit "playing the game" accordingly. Vandalism is negative sportsmanship. Where it stems from ignorance of the rules, information is a simple and adequate antidote. If it

arises from carelessness, the practice of good habits is the solution. Destructive acts motivated by selfishness might be curbed by imparting to potential offenders better perspective of their relationship to the whole of nature and to society. All of these curative measures are classifiable as functions of education.

OUTDOOR EDUCATION IN RESIDENT AND DAY CAMPING PROGRAMS

BY REYNOLD E. CARLSON

By Permission of the American Institute of Park Executives.

CAMPING is as old as the human race. To primitive man it was his way of life. He lived in close association with the natural world; his food, shelter and clothing came from the woods, fields, and streams; his art, religion, and social life were colored by his relation to that world. Our early American pioneers likewise lived in intimate relationship with the out-of-doors. With the development of modern industrial and urban life, however, children and adults have been cut off from the heritage of outdoor living that has existed since the origin of Man. The less contact Man has had with the natural world, the less it has been possible for him to understand the basic problems of existence, food production, the need for conservation, and the functioning of natural laws upon which all life depends; and the more difficult it has become for him to appreciate the simple pleasures of outdoor life.

The various movements to provide outdoor education are concerned with re-establishing man's connection with the natural world and with giving him direct experiences in the out-of-doors. "The primary function of camping is to facilitate the social, mental, and physical growth of the indi-

vidual through participation in cooperative living in the out-of-doors." The following are a few of the specific outcomes that might be expected from a good camp experience:

1. An increased understanding and appreciation of the various phases of natural history; a friendly familiarity with the common aspects of the camp environment.

2. An increased appreciation of the beauty, complexity, and inter-relatedness of the natural world.

3. An increased understanding of the human heritage of pioneer, explorer, and Indian.

4. Increased skill in using the resources of the out-of-doors and in caring for oneself there.

5. A knowledge of man's dependence upon natural resources and a keener sense of responsibility for their conservation.

Last summer probably about two and a half million American children attended organized camps in the United States. Most of these participated in resident camps or day camps operated by one of the youth agencies. Others attended private camps, which generally are of longer duration than agency camps, or attended camps operated by churches or by various pub-

lic agencies—schools, park and recreation departments, or welfare departments.

One of the significant developments in the camping movement in recent years has been that of day camping—a form of camping in which the children sleep at home but attend camp during the day in some nearby area, participating there in a program of activities related to the out-of-doors. Another significant development has been the increase in the participation in camping of such government groups as schools, park and recreation departments, and forestry departments.

Many people have thought of the camping movement as providing fun and a vacation but have overlooked the educational values inherent in the camp experience. In my opinion, there are several factors that make the resident camp or the day camp potentially one of the best situations for the kind of outdoor education in which we are interested.

First, the camper is placed in direct contact with the world of nature. He lives closely with the weather, stars, rocks, soil, trees, flowers, plants, mammals, birds, insects, lakes, streams, and all of the other manifestations of the out-of-doors. The relationship is firsthand, and natural forces become an important factor, probably the most important factor, in his life. While he may not learn to understand the forces of nature or to appreciate them adequately, still he has had experiences with the natural world.

Some camps completely miss their greatest opportunity by centering their activities around interests that might as well be carried on in the city. Increasingly, however, camp leaders are recognizing the educational possibilities that lie in experiences with the natural environment, experiences which are impossible or at least arti-

ficial in the city. The setting in camp is one in which outdoor education can fruitfully take place.

Second, the modern camp operates largely through small groups made up of children of approximately the same age and of somewhat similar interests. The leader-camper ratio is generally high, with one leader to every six or ten campers. The relationship between leader and camper is usually informal and friendly, the leader participating with and enjoying with the group. The group lives together for twenty-four hours a day for as long as six or eight weeks (or, in the day camp, for six to eight hours a day over a similar period). A situation ideal for learning is hereby created: the combination of a small group, informal leadership, and an adequate period of time.

Third, the camp experience is an adventure. It is fun. There is plenty of evidence to prove that the things we enjoy influence us profoundly. Learning takes place much faster, lasts longer, and affects us more deeply if a real interest and enjoyment exists and if a sense of adventure goes along with the learning. Outdoor life has a tremendous appeal to youth; in fact, we might go so far as to say that it has one of the strongest appeals of all. The largest boys' organization and the largest girls' organization in America make their greatest appeal through the desire of children to engage in outdoor activities.

Fourth, the camp program is a program of doing. Learning takes place not through reading and listening as much as by actively engaging in the program.

These four factors—outdoor experiences, small groups under informal leadership, programs of fun and adventure, and doing—all these make the camp one of the most powerful

types of educational experiences. However, good outdoor education does not necessarily take place in all camps. Many camps fail miserably to take advantage of their opportunities. Others do a remarkably fine job. Increasingly, camp leaders are becoming aware of their responsibility and are endeavoring to improve their programs,

whether in public, agency, or private camps.

Some of the reasons for failure to do a better job have been lack of trained leadership, lack of adequate outdoor settings, and in some cases a preoccupation with "entertaining" the camper rather than making the camp period a meaningful experience.



The Batata and the Papa

The true potato is a member of the morning-glory family, was called "batata" by the Indians when the white man first arrived on this continent, and is the sweet potato of today. Not until 1538 did the Spaniards, pushing into what is now Colombia, discover the white-meated tuber the Incas called "papas" and which we miscall the potato or, even worse, the "Irish" potato. It is a member of the nightshade family. It early developed a false reputation as poisonous or a

soil poisoner, and its use spread slowly. But the Irish took hold of it early as nutriment and, in 1719, Irish immigrants brought the first potatoes to North America, planting them in Rockingham County, N. H.—hence the name "Irish" potato. Frederick the Great had trouble making his peasants grow these potatoes, Marie Antoinette helped popularize them in France, devout Scottish folk scorned them because the Bible did not mention them.

From U.S.D.A Employee News Bulletin.

CONSIDERING LILIES

II—VARIETIES

MILDRED STEELE

THE following list of lilies with their approximate blooming dates and successes, is comprised from notes and memos of 3 growing seasons in my own garden. Up to that time, my experience was very small, and the whys of failure, vague. At least, one becomes more philosophical with more experience, but the "fever" is incurable. When gardening is incidental with many other activities, I find it more practical to add only a few new lilies to my collection each season, the

better to give them the individual care so many require to become happy residents in the garden.

My first lily to bloom is *Lilium pumilum*, formerly called *tenuifolium* and commonly, the coral lily. It starts about June 5, and lasts throughout the month. It is very generous of bloom, and delightfully fragrant, but the bulb is short-lived. It propagates readily and easily from seed, as well as by a few off-shoots from the parent bulb. Any good soil with proper drainage is suitable, in full sun or partial shade. For identification, this lily is a small, very brilliant red turkscape, a native of N.E. Asia. It is excellent for the rock garden.

At this same time, *Lilium szovitsianum* came into flower. This is bell-shape, with slightly curled-up petals, a delicate straw color with dark speckles inside. It is native in the Caucasian highlands, and good for a partly shady spot.

Now, also, the many kinds of umbellatum lilies begin a long season of bloom. Of this type, the lovely *Lilium dauricum* is the earliest. The color is a soft apricot flecked with brown; its growth is dwarf and its culture easy, the same as that of the well known "Russian Lily". It has been used occasionally as a parent for hybridizing with the Russian lily as well as with *Lilium belbiferum*. Many lovely shades in coloring of lilies of various heights and blooming times have resulted. These lilies are good for cutting and give brilliance to the border or other plantings over an extended season.

Early in June, our native *Lilium philadelphicum montanum* blooms in



my garden, probably 2 to 3 weeks earlier than it does in the hills. It is extremely scarce in the wild, probably due to grazing, being slow to propagate and becoming established. Mother Nature sent me a bulb in a load of mountain soil we bought several years ago. It was a considerable mystery when it first flowered, but after observing the 2 or 3 bulbils that came at the base of the flower after blooming, the solution was obvious, and we have felt more than a little proud to have this wildling living with us.

Lilium concolor, a dwarf lily from central China, appears now too. It is good in the rock garden, being very brilliant red. The flower is upright, and star-shaped, often being known as the "star lily".

Lilium hansonii blooms the latter part of June. It is a native of N. E. Asia, and exceptionally hardy. The flower is a recurved type, small, and of a soft yellow-orange color, flecked with tiny brown spots. The buds are practically round, the petals very thick and heavy. It is an intriguing lily and should find its way into more gardens. It does well in partial shade and open ground if the surface is lightly mulched.

A new lily to me this Spring for a shady spot, is *Lilium amabile luteum*, a most dainty pale yellow with recurved blossoms.

Blooming but a little later is *Lilium parryi*, one of the loveliest of the native lilies originating in California. The culture is not too difficult if one can give it partial shade with a ground cover of small plants. The soil must have a high humus content, yet be well drained. The flower is a clear yellow, recurved, speckled on the inside, and has rich orange anthers. It is not too different from *amabile luteum*, but perhaps easier to become established.

Beginning about the end of June, is *Lilium candidum* or the Madonna lily. It comes in various selected forms now, varying only slightly from one another except in blooming time. They thrive in open ground in full sun, and the soil should be heavy. They tolerate our alkaline soil very well. The autumn growth of leaves makes the necessary winter mulch for the bulbs which are very shallowly planted. In my own garden, the soil is too sandy and light for raising good Madonnas unless it is made to order. Before learning the secret, it has been rather puzzling to get a stalk laden with bulblets instead of flowers. Another strange thing happens—the bulbs have a tendency to go down into the soil as much as 2 inches below the original planting, resulting in the deterioration of the bulb.

Lilium pardalinum, another native lily from California, blooms in early July. There are several forms of this lily, and if one is fortunate to have clones of several the season is long, and since they can be cut without apparent injury to the bulb, there will be much pleasure in having plenty for flower arrangements. This is a turkscap lily, a rich golden orange with red tips on the petals; very hardy and easily propagated. It isn't particular as to soil, but does better in fairly light humusy soil with full sun.

Beginning in July, one may have a continuous procession of white trumpet lilies. *Lilium browni* is first, and is still very new on the market in this country. It is reputed to be one of the hardy sorts, and my first trial was a joy. There are several forms, all blooming at different times. The Regal is probably the greatest delight of all, so generous of bloom, so absolutely perfect in its exquisiteness—no fussiness—no temperament. If the Regal lily is for the border, it will be well

to have a stock supply where they get good sun and the watering can be spared after blooming. This will keep up the bulb supply, and give one some flowers for cutting. Keep the surface mulched with some humus.

Lilium formosanum, early variety, is dwarf, blooming just after the Regal. This is frequently confused with *philippinense*, of which there are none on the market in this country. It has a longer, narrower trumpet than the Regal, either tinged purple on the outside, or pale green. It comes readily from seed, but needs careful selection of form. The intermediate form of this lily blooms late July, and is somewhat taller than the early variety. The late form seldom blooms before frost.

Coming between the early and intermediate forms of the Formosa lily, is the *Lilium longiflorum*. These are sold on the market as Croft or Estate lilies. It is generally thought that the Estate lilies are more hardy in this part of the country. They are quite dwarf, but of exquisite form and fragrance, and nearly completely white. They require full sun and a well-mulched surface with fairly heavy soil.

Lilium sargentii, a white trumpet lily, as beautiful and illusive as a song, will bloom also late July. The backs of the petals are suffused with pink and delicate green, the anthers are a rich shade of umber, and the fragrance is heavenly. Nature provides numerous bulbils in the axils of the leaves to perpetrate its beauty. Any injury to the flowering stem, or cutting it for the house is certain death to the bulb. They must be given only the "leastest" water at the time of ripening, and the surface should be well mulched, preferably with pine needles, partial shade too, is a requi-

site. Good drainage is very important as the bulbs are deeply planted.

Lilium japonicum, one of the very few pink trumpet lilies is a small, elfin gem. It is for an individual planting in a shady place where one can nurse it carefully.

Liliums grayi and *kelloggii* are both very small exquisite lilies to be tucked away where they can safely bloom and mature without injury to the stalks. Both are natives of California and are quite delicate. They bloom in early July, require some sun, but need ground shade. *Grayi* is bell-shaped, of soft golden orange. *Kelloggii* is a violet pink turkscap, flecked with purple.

The Tiger lily blooms along the latter part of July or early August. It is the best known and the longest cultivated of all lilies in American gardens. It is native in Asia and exceptionally hardy in nearly all soil. It likes sun or partial shade, and needs good drainage.

Lilium henryi blooms this same time. It is a recurved lily and is frequently called the Golden Speciosum because of the fleshy papillae on the inside of the petals. The flower excels in part shade, is a profuse bloomer, but the stems are weak and generally need staking. This lily is hardy, resistant to disease, good for cutting. It is a native of China and a very desirable garden favorite requiring plenty of humus.

Lilium davidi, next in succession, is very like a tiger lily, but infinitely more dainty. It is a Chinese lily, and reasonably hardy, but takes a long time to become established. The Speciosum lilies begin to bloom the middle of August, and since there are many forms on the market, their season is long. *Lilium speciosum pictum* is the earliest. It is vigorous, and well colored, if not so brilliant as the later ones. Next are the *speciosum rubrum*

which vary considerably in height and perfection of the flower. The latest to bloom is the *speciosum alba*. All of these lilies are superbly beautiful. Although they are native in Japan and Formosa, they are reasonably hardy here. They need a deep friable soil, well drained, and a light ground shade. Watering must be sparse after the blooming period, but a good thick mulch will help to keep the ground around the bulb the right dampness. These lilies must not be cut or damaged unless one has a considerable supply.

Lilium auratum is of Japanese origin. The large, open flowers are white, generally flecked with crimson on the inside, and a golden band running down the center of each petal, thus giving it the common name, "Gold Banded Lily". There are many forms of this lily, produced from selected seedlings, giving it a long season for blooming, and one thinks each succeeding flower the greater masterpiece.

They are considered to be quite hardy, but for some reason are of delicate behavior here. More experimenting with soil mulching and ground cover may solve the problem, or it could well be a matter of mosaic disease, to which they are highly susceptible. In any case, do have this lily. If it blooms but once, it costs no more than a florist's bouquet, and lasts longer.

Liliums canadense, *cernuum*, and *testaceum* are known to be hardy here, but my own experience with them is too new to give any details of culture. I feel sure many other lilies than those mentioned will eventually prove good garden subjects for Boulder. Denver horticulturists find the list considerably smaller, except in a few favored, protected places.

NATIONAL SHADE TREE CONFERENCE

All those interested in trees, especially the commercial arborists, will profit by attendance at the National Shade Tree Conference to be held this year at Syracuse, New York, from August 21 to 25.

The educational programs will consist of papers from many of the leading scientists and practical tree men of the United States. There will be plant clinics, complete exhibits of tree tools and insecticides, and outdoor demonstrations. Anyone interested may get more information from the secretary, Dr. L. C. Chadwick, Ohio State University, Columbus, Ohio or from the several local members.

AIR-BORNE INSECTS

from The Shade Tree Digest

Some species of insects, aided by warm-air currents and winds, can travel distances that seem unbelievable when compared to their normal flights. For example, aphids usually fly only short distances. Yet Professor A. C. Hardy, of the University of Oxford, England, reports that aphids have been taken from the air 100 miles at sea. Computing their rate of travel and probable take-off point from wind direction and velocity, it has been estimated that these insects can stay in the air at least fifteen hours and travel about 246 miles in that length of time.

LYLE F. WATTS, Forest Service, Washington, D. C., recently received the Honor Award for distinguished and effective leadership in advancing the conservation of forest resources in the United States and internationally.

*From U.S.D.A. Employee
News Bulletin.*



ORNAMENTAL DETAIL IN GARDENS

MRS. KARL ARNDT

AT the risk of remarking the obvious, or appearing ponderous, one may point out that gardens, from their ancient past to present, are simply the meeting, according to various philosophies, of nature and art. The Colorado garden, planned in an unruly, if magnificent climate, is subject to late snows, lashing hail and early frost. While long hours of sunlight make garden space enjoyable for a large part of the year, the garden that depends entirely on plant material for its interest is regularly wrecked by the violence of Rocky Mountain weather. The use of permanent material in a garden design can, to some degree, diminish the blasts of nature, by protecting the plant material, by offering a lasting and pleasant contrast of the textures of stone, wood and metal to plants, as well as substituting its hardy forms for perishable plantings. N.B. From a garden notebook, 1950. "Pav-

ing is not pierced by hail; sculpture will not wither after a killing frost; a wall is beautiful and strong beneath a crest of snow as well as summer vines."

Since future articles will continue to discuss the design and use of larger architectural elements, such as pools, walls, etc., this note will confine itself to a few observations on the use of ornamental detail in gardens. Certainly they do not pretend to offer any formula of decoration, but to suggest possible guides to the imaginative judgement.

I. Character

The character, or "feeling" of a garden, whether it be formal, informal, of a certain architectural type, or stressing a particular activity or interest of its owner, will suggest the character of its ornament. Ornamental detail should "fit" into the idea of

On opposite page:

Sculpture of St. Francis, by Marion Buchan, in garden of H. E. Fraus, Colorado Springs, Colo.

Photo by Guy Burgess.

On right: Abstract Sculpture in cast stone before a pierced brick wall. In garden of Douglas Havens, Denver.





Above: A sculptured baroque fountain rises from a terrace overlooking the mountain range. Garden of Mrs. Ella M. Weckbaugh, Denver.

Below: Crane in lead, fishes from one edge of a small pool. Garden of R. D. W. Clapp, Colorado Springs.



a garden design or it will produce an ostentatious, jarring note. In example: A pair of classical figures will require a rather formal, symmetrical setting for background; probably they will not be at home on the irregular, twisting levels of an alpine rockery.

A row of common clay pots planted with dwarf marigold or lobelia will decorate the edge of a child's play space, while an imposing urn-on-pedestal in the same location will suggest an inappropriate jungle gym.

An astonishing example of suitability and rightness occurs in the interior carriage court of a grim, 1890 Victorian sandstone building in New York. Cast iron fountains, encircled by heavy curbs, are spaced evenly on the paving. Every Easter a stiffly arching bouquet of large white leather

calla lillies is arranged atop the fountain jets; every Michaelmas they are removed and washed, to store for the following spring. The same quality of perfect suitability is seen in a small, enclosed garden in Denver, where a troop of lead gosling parade around the platform of a simple round brick well head, changing formation at the will and to the delight of a number of children.

II. Scale

The scale, or relative size of an ornament to its surrounding, determines the fine balance of a design. Generally, the larger the ornament the more important it becomes to the entire design, and must control a corresponding area of the design. In example: The high-flung, sculptured form of a baroque fountain rises from a terrace which is marked by stone balustrades, a monumental accent in an immense vista of distant mountain range.

A small wall fountain of intimate, close-worked design, is seen in an intimate, small-scaled surrounding. Delightful to see on a secluded, tiny terrace, it would be lost at the end of any vista or beneath large planting.



Above: Dancing figure set in pool framed by light water grasses. Garden of Mr. and Mrs. Robert Martin. Photo by Earl Davis.

Below: Small figure placed in crossing of intimate rose garden, laid out in traditional geometric beds. Garden of Mrs. John Kerr, Denver.







*Above: Terra cotta basket atop a small brick post at the entrance to a paved terrace.
At left: Lead goslings at a brick well.*

All pictures on this page from garden of Mr. and Mrs. Lawrence C. Phipps, Denver.



Above: A sculptured shell for birds lies beneath trees beside a myrtle-bordered walk.

Below: Classical fountain of marble with lead decoration, placed between sculptured lead urns.





Above: A bird bath sheltered by rose foliage. In garden of Mrs. Beulah Son, Golden.

Below: Wrought iron gate from entrance court to garden. Garden of Mr. and Mrs. John Evans. Photo by Earl Davis.



Pots decorate the levels of a stairway in the fashion of the Spanish Garden.

The dimension and design of a wall area will determine the size of any form which casts its silhouette against it. It is well to remember that forms seen outdoors, or in landscape scale, will appear smaller than when viewed indoors, or at room scale. The figure that seems too massive in a studio will often appear in scale when placed outside, and the charming little figure of the studio may seem pinched and dwarfish in the air.

III. Situation

The situation, or placing of an ornament depends in part on these earlier considerations of character and scale, and also on its function in the garden. Whether a form is placed centrally, symmetrically or asymmetrically, high or low, among heavy or light planting, will depend on its character and scale. Its function as an ornament, whether it be a work of art, placed to be carefully seen, a simple decoration, or a necessity in the garden, such as a gate or water source,



Above: A vine-hung brick wall has a terra cotta plaque for all-year decoration. Garden of Julia Jane Silverstein, Denver.

should be considered in its placing. In example: A garden exit from a simple flower walk into a meadow seems to call for a gateway of great simplicity, while the entrance to a formal, walled garden will allow a more elaborate pattern.

The carved shell of a bird bath can be half-hidden under trees and shrubbery, where birds will easily reach it.

In the Cloisters of the Metropolitan Museum is an sixteenth century alabaster figure of the patron saint of gardeners, St. Fiacre. The figure is about 28 inches in height, unpretentious and unassuming amid the great works that crowd cloister and court. Commanding no particular position in either size or art, the little figure is moved about, from the window sill in an arcade to the cloister floor, from simple room to a position above the cold frames, sending his blessing at the proper season on all the living plants that are grown in profusion in the museum. Whatever his efficacy, his situation seems to be perfect.

Below: A wall-fountain of close-worked design is placed in a small corner of ivy-planted wall. Garden of Mr. and Mrs. Thomas Patterson Campbell, Denver.





Transplant beds, Monument Nursery. Photo by U. S. Forest Service.

TO KEEP THE FUTURE GREEN

BY DON BLOCH

U. S. Forest Service

FROM its two forest tree nurseries —at Monument, Colorado, and Halsey, Nebraska—the Rocky Mountain region of the U. S. Forest Service this spring sent out 2,865,400 trees of 17 species, both conifers and hardwoods.

This vast number of two- and three-year old seedlings, to be used as watershed protectors and erosion controllers, patched and laid a carpet of living green natural resources on 4,613 acres of bald and burned-over national and other forest lands in 10 states all the way from Montana to Pennsylvania.

Each year now, for more than four decades, the spring weeks from mid-March to June—fore and aft of the annual observance of Arbor Day—have marked the tree-planting season for the Forest Service. And, for each of these years—44 to be exact—its crews and cooperators have artificially reforested an average of some 1,780

acres on national forest lands in the Rocky Mountain region alone.

For the current season, 1,613,550 conifers, of five species—Engelmann spruce, Douglas-fir, juniper, lodgepole and ponderosa pine—were set out on 2,770 acres on a dozen national forests in the region, all but two in Colorado.

For the most part, the seedling stock for these plantings was raised at the Forest Service nursery at Monument, Colo., which has an annual capacity of six million trees. A small lot of 4,000 wild plums, however—planted on the Pike National Forest for erosion control and watershed protection; and on the Grand Mesa, for gully and erosion control on the Kannah Creek watershed—were grown at the Service's Bessey Nursery, near Halsey, Nebr.

Monument supplied the bulk of the 5,000 juniper, 525,000 ponderosa pine, and 37,500 Douglas-fir trees which were planted on the Pike. Fifty

thousand of these went for replacement of trees on a cut-over area on the Devil's Head district; the rest, along Buffalo Creek, for erosion control. About 550 acres, altogether, were reforested by regular Service planting crews. This was the largest project undertaken this spring.

The project on the Pike, almost annually, represents the largest single reforestation job of the region. Last year, 650,000 young seedlings for watershed protection were planted on the Spring Creek drainage of the South Platte river, with the planting camp also located at Buffalo Creek. This area is one which has suffered much from erosion, because of the loose, granitic character of the soil and the damage to ground cover done in past years by overheavy use. The purpose of these plantings is to re-establish a tree-covering which will eventually grow dense enough to protect the bare hillsides from further loss of soil.

The first plantings in the Rocky Mountain region, in fact, were made on the slopes of Pikes Peak early in 1906. Since the creation of the Monument Nursery, in that same year, the Pikes Peak area and later the South Platte river drainage within the Pike forest were the centers of intensive planting activities. To date, almost 27,000 acres have been artificially reforested on this single forest.

Second heaviest planting this spring was on the San Juan National Forest in southwestern Colorado. Here, on the broad tops of Hay Camp and 8-Mile Mesas, is the best timber-growing region in the state, producing the biggest trees, bringing the best prices. On 160 acres of this land were planted 66,500 lodgepole and 35,000 ponderosa pine seedlings, to add to the forest resources.

On the San Juan, also, on the site of the old Lime Creek burn, another 20 acres were planted to aid in recovery of this forest-fired site. This



As a burned over hillside looks a few years after being replanted with small pine trees.

planting, although accomplished by Forest Service crews, was this year's contribution to the cause of conservation by the Colorado Federation of Women's Clubs, sponsored by and partially financed by this organization. In Colorado, alone, now since this program was begun in 1937, over 340 acres have been so reforested.

Another mesa top—the Clinetop, on the White River National Forest—was the site for a spring planting project. Totals of 6,500 lodgepole pine, 22,400 Douglas-fir, and 15,700 Engelmann spruce seedlings were planted on about 65 acres, to produce timber.

Five other national forests in the state this spring, besides the White River, were the beneficiaries of Boy Scout cooperator plantings. For the Scouts, such projects are an annual activity in connection with their conservation work and the earning of merit badges. Forest Service personnel cooperate in these and similar pro-

Still years later the replanted areas begin to again look a little like natural forest and are beginning to hold the hillside in place. Both photos by U. S. Forest Service.



jects as advisors and instructors, and in choice of planting area.

On the White River, the site was seven acres near Minturn and Carbondale. Explorer and Boy Scouts put in 6 acres on the San Carlos District of the San Isabel Forest. With their leaders and Forest Service help, 20 Boy Scouts planted about 2,500 Douglas-firs on Myers Creek, near Monte Vista on the Rio Grande forest, to establish a Christmas-tree plantation. On the Arapaho, eight acres were planted in the Cold Springs Campground area, near Black Hawk; and 1,000 ponderosa pines and 1,200 Douglas-firs were planted by Scouts on Soap Creek, on the Gunnison. Largest of these projects was a 22-acre cooperative planting by the Colorado Mountain club, and 4-H Clubs and Boy Scouts of Ft. Collins, in the Mammoth Basin area on the Roosevelt National Forest.

In addition to these plantings, from both the Monument and Bessey Nursery, there were shipped out another

1,251,850 seedling trees of 12 species, conifers and hardwoods. Grown from seeds collected on forested areas all over the Rocky Mountain region, the conifer species include the lodgepole, black, pinus banksil, ponderosa and pinon pines; Douglas-fir; Engelmann, Black Hills, and Colorado blue spruces; and juniper; and the hardwoods include wild plum; American and Chinese Elm; Russian olive; honey locust; green ash; and Buffalo berry.

These trees will eventually go in on a further 1,843 acres—in the Dakotas, Nebraska, Montana, Utah, Iowa, Pennsylvania. All these are distributed under the provisions of the Clarke-McNary law which permits such distribution through cooperators to farms and ranches for shelter and windbreak plantings, Christmas-tree plantations, experimental forestry, reforestation around lakes and dams, and for general State Farm Forestry Programs use—to keep the future green.

BOARD OF REVIEW REPORTS ON GRAZING SITUATION IN ROOSEVELT FOREST

SECRETARY of Agriculture Charles F. Brannan made public April 7th the conclusions of a study made by the National Forest Board of Review on the grazing situation on the Roosevelt National Forest in Colorado.

The Board's study was made at the request of Secretary Brannan because of the broad scope of the problem and the policy questions involved in reducing numbers of livestock permitted to graze in the Roosevelt National Forest in order to protect watershed and other values from further deterioration.

The National Forest Board of Review was established in 1948 by the

Secretary of Agriculture to advise him on questions of general policy and the solution of major problems arising in connection with administration of the National Forests. Its members are Dr. Jonathan P. Forman, of Columbus, Ohio; Prof. Gilmour B. MacDonald, formerly head of the department of forestry, Iowa State College, Ames, Iowa; and Dr. Roland Roger Renne, president of Montana State College, Bozeman, Mont.

An evaluation of the various uses on the Roosevelt National Forest, the Board of Review said, indicates that watershed values should be given first priority consideration. Recreation, including camping, picnicking, tourist

travel, hunting and fishing, was given second priority; grazing, third; and timber uses, fourth.

Range lands or important watersheds visited on the Roosevelt National Forest showed excessive deterioration, the Board said. It was stated that closure of limited areas to grazing seems to be justified where steep topography, erosive soil, and lack of vegetative cover make such action imperative in safeguarding the water and soil resources. The report added, however, that "there should be a clear and general understanding that it is not a major policy of the Forest Service to exclude grazing on any except such particularly unsuitable, limited areas."

The technical procedures for range management on the Roosevelt National Forest appear to be sound, the Board reported. Need for an intensified range research program was emphasized, involving especially (a) Reseeding experiments including both perennial and annual plant species; (b) Study of sub-climax types of vegetation in the economy of the range; (c) Replacement of cheat grass on depleted ranges with better species; (d) Establishment of additional demonstration range plots to show, in weight of forage or pounds of meat

produced, the good economy in moderate range use as against over-use.

In the administration of timber sales, the Board advised limitation of cutting practices to the extent necessary to protect the watershed values. According to the report, this might involve elimination of all timber cutting on critical areas requiring selective cutting and protection of soil cover by careful logging practices on all timber sales.

The Board of Review prepared its report and recommendations following a field survey on the Forest and numerous conferences with stockmen, sportsmen, water users, recreationists, officials of associations, editors, and the public, as well as with administrators and scientific staff members of the Forest Service and other governmental agencies. The survey also included a review of publications, documents, and letters made available by stockmen, the Forest Service, and others.

The Board's findings, Secretary Brannan said, "are of particular interest, coming as they do from a group selected on the basis of personal competence and not as representatives of any individual organization directly concerned with the use of national-forest lands."

U. S. Forest Service crews planting small evergreen seedlings on burned over mountain slope. Photo by U. S. Forest Service.





DONORS TO LIBRARY

At the Horticulture House for the
month of July

Ernest Chabot
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BOOK REVIEWS

"How to Know the Wild Flowers", by Alfred Steffernd. A Mentor Book, published by the New American Library, 1950. Available at News Stands for \$0.35.

Here is a handy pocket-size book for the amateur wild flower enthusiast. While not written for our region, one may find many of our commoner flowers in its pages. The line drawings and descriptions are accurate and the author has included much good general information.

The first pages give a pleasant introduction to the study of flower identification and from there on the flowers are grouped according to their family characteristics, which after all, is the most satisfactory method of learning the subject.

The chapter entitled, "The First Families", (page 127) is most valuable. Following this are hints on cultivation of wildlings. Then follow descriptions of ecological groups, such as meadows and field flowers, roadside flowers, flowers of woods and forests,

and those of lakeside, pondside and seaside, and of the marsh and swamp.

Altogether this little book is a big thirty-five cents worth. (Also available in a \$2.00 edition, published by Henry Holt & Co., N. Y.)

"Flowers, A Guide to Familiar American Wildflowers". A Golden Nature Guide. By Herbert S. Zim and Alexander C. Martin. Published by Simon & Schuster, N. Y., 1950, \$1.00.

The illustrations in color by Rudolf Freund, are the best recommendation for this book. Small range maps with each flower may assist the amateur in locating a given plant, but are not too accurate in every case. The authors of this little book have shown a reluctance to introduce the reader to the botanical names of the flowers, so that further information might be obtained. Some genus names are used where no common name was at hand, but the beginner has no way of knowing the common from the scientific name. This in the case of a general flower book can be a distinct lack, as it is well known that common names vary greatly in different parts of the country.

Sometime-Never. This book is not fiction. What a strange title and what can it be about?

I have just finished reading the last page and I still wonder what the author had in mind. Clare Leighton, who has also given us the practical, *Four Hedges*, seems to me to strive here to bring to the confused modern mind, joy in living. It is the simple stated belief of a human being in the possibility of true happiness. She seems to want to tell us that we are not mad; that life is not mad; she begs us to sing our songs and live our poems.

"*Rhododendrons*", by Kingdon-Ward.

Published by Pellegrini and Cudahy, N. Y., \$2.50.

When the writer saw this book by Kingdon-Ward at Horticulture House, she gladly offered to review it as other books by this author have been much enjoyed. His "Plant Hunter's Paradise" and "Plant Hunting in the Wilds" have given her many happy hours.

The little book, "*Rhododendrons*", is also pleasant reading but here emphasis is not so much on the joys and sorrows of discovery as upon the selection, classification and characteristics of the various species and hybrids and upon their cultivation and propagation. For this reason, perhaps this little book may not attract a large audience in Colorado where growing rhododendrons is certainly a distinct gamble at present. But we do not want to give up the idea of growing broad-leaved evergreens here too easily. When we read of Mr. Kingdon-Ward's discovery of some of these beautiful plants in high Tibet and other parts of the world where rigors of climate present seemingly insurmountable difficulties, may we not hope to learn to meet their requirements and to build up a strain suited to our peculiar climatic conditions?

How many know that the botanists have discovered a native rhododendron in northern Colorado?—(*Rhododendron albiflorum*, Hook). Is it not reasonable to suppose that we may be able to produce some hybrids of our own by using our own natives in the process?

Mr. Kingdon-Ward's book should be a challenge to many ardent horticulturists in our state. Those greenhouse enthusiasts may be much interested in the chapter on greenhouse *Rhododendrons* and the chapter on

hybrids points out that there are now close to two thousand named hybrids. It closes with the statement: "What the future holds in the way of hybrids no man knoweth, but we may expect some startling varieties in the near future."

We will hope some ambitious hybridist in Colorado will read Mr. Kingdon-Ward's book and make history for himself and our State by producing a rhododendron which will be really satisfactory in the Rocky Mountains.

KATHRYN KALMBACH.

Principles of Color and Color Mixing
—by Bustanoby.

Useful for those concerned with the application of color. A simple system for the identification of today's tints, hues, tones and shades, including 250 formulas for mixing them, and the influence of color on our daily living. Authoritative definitions of color terms are included.

Check the house plants that you set outdoors. Some need to be kept dormant while others should be growing vigorously. Look for insect pests.

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Questions and Answers

Question—I am new at planting perennials and I seem to lose my plants. Where do I err?

Answer—In planting, it often helps an amateur to take a few stakes and place one at each point he desires to set a plant. If you set six or more stakes, plant six or more plants, pulling up the stakes as you proceed to plant more. Make the holes in the bed wide enough to allow the roots to go in without crowding, and after filling in the soil, press it down firmly around the neck of the plant and over the roots and water well when all the bed is planted. During dry, hot weather soak the bed well and then let it alone for a day or two or three, although in the evening, after a hot sunny day, accompanied by a strong, drying wind, if the foliage looks wilted, a showering overhead is sometimes beneficial. In a day or two, after a good soaking, it is well to go lightly over the bed with a mulcher and stir up the soil, breaking up the crust produced by watering. This makes a mulch which will conserve the moisture and protect the roots from the hot sun. Frequent slight watering is wrong for it keeps the moisture at the top and the roots are then inclined to grow upward to meet it. If you then neglect to water, the soil soon becomes dry and the roots suffer. H. F.

Question—What is Sweet Rocket? Lucile Waters, Fox Street, Denver.

Answer—The technical name of this plant is *Hesperus matronalis*. An admirable plant for places where some other plants fail. It does well in semi-shady places at the base of shrubs or in between them in open spots. Plants grow three or four feet tall and are of bushy form when treated well and bear pinkish-lavender flowers in June and July. There is also a white form.

What are the names of those plants I see in some gardens that look like Fall Asters? Lucile S. Smith, Golden.

Answer: I think the plant you refer to is the *Boltonia*. It comes in white, *B. asterioides*, and *B. latistachya*, pink. The *Boltonia* is a native, tall and stout, enjoys the open sunlight and should be planted near the rear of the border or bed. Its profuse bloom in late summer and early fall makes it an attractive garden plant and a nice substitute for the fall asters (*Michaelmas Daisy*). As a substitute for the white fall aster I often use *Pyrethrum uliginosum*.

Kindly explain the following terms: Collar, Corolla, Rogue, pubescent, raffia, argenteus. K. B., Denver.

Answer: Collar—That part of the plant from which the roots and stem emerge. Corolla—The combined petals of a flower. Rogue—A gardener's name for a plant which does not come true from seed. Pubescent—Clothed with soft, downy hair. Raffia—The well-known material used for tying. Prepared from the fibres of *raffia pedunculata*. Argenteus—Silvery.

Members of a class who made a special study of nomenclature all know these names but I am sure there are many others that do not. May we ask that a few horticultural terms be explained each month in the Green Thumb?

Question—Please tell me the difference between the flax flowers, *Linum perenne* and *Linum narbonense*? G.R. Student at Boulder.

Answer—*Linum narbonense* comes from Southern Europe; the flowers are slightly larger and bluer in spite of a delicate line of other color down each petal. It lasts longer too. Here is what Clarence Elliott says about it: "If picked just before it opens, it lasts well in water."



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parks, state parks and botanical reserves throughout the State;
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estry and horticultural practices; plants best suited to the climate; coordi-
nation of the knowledge of foresters, horticulturists and gardeners for
their mutual benefit; a connecting medium between the association and
the member.

A BOOK ON ROCK GARDENS

In a letter received this week, a doctor writes, "I am afraid that I do not understand how to make a rock garden. I should like to create a beautiful scene and at the same time make a safe and comfortable home for the rarer plants".

So far as the right construction and setting of a rock garden go there is a rather recently published book that shows us just how to go about it. It is, "*Natural Rock Gardening*" by B. H. B. Symons-Jeune. It is a true counsel of perfection and when you have gone through its many fine and helpful illustrations and have absorbed its incontrovertible precepts, you may not have much respect for some of the "heaps" you see in many gardens. I will say this however, that these "rock piles" are often enjoyed by many who receive respite for those six days of adding never-ending rows of figures or from many other dull jobs and who wait for that wonderful Sunday. Then they may "visit" Corsica, the slopes of the Andes or the Himalayas, the native homes of these "Alpine"

plants and they often get their greatest pleasure from working especially with them. But, to the landscape architect, all gardens are, or should be, a work of art created by an artist. A rock garden too often appears to him the work of a person devoid of any knowledge or feeling for art.

After carefully studying Symons-Jeune's excellent book, I doubt if I can agree with the writer of that other book on rock gardening who says, "Enjoy your garden whether or no. Let it be for you what it will and do not worry if it falls short of what you know to be ideal. There is as much happiness to be found in a lower atmospheric stratum as that which swims to a particular star to which you have hitched your horticultural chariot". But to me, truth and beauty always seem to matter tremendously and I doubt if there is any good and ample excuse for these imperfect rock gardens.

In reading Symons-Jeune's magnificent work, it is possible that you may catch some of his taste, his vision and ingenuity to help create that coveted beautiful scene and in almost any situation.

HELEN FOWLER.

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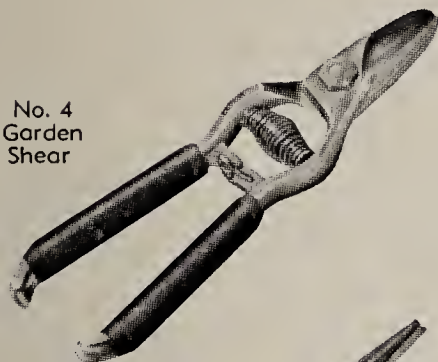
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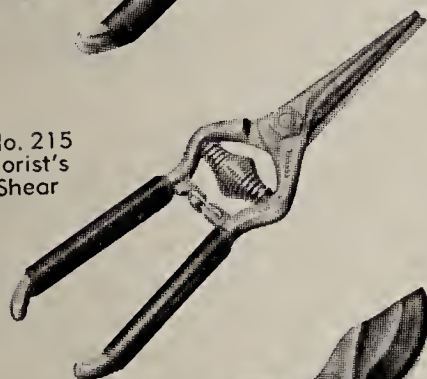
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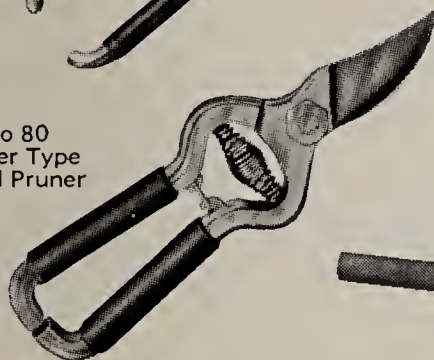
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AN OPPORTUNITY

We are sorry to announce that Mr. and Mrs. Richard Osborne will be leaving us in August. They have had charge of the inside and outside of Horticulture House, have kept the financial records and the records of membership. They have lived in the apartment at Horticulture House.

If any member knows of some one, or couple, who would be interested in taking over any part or all of these duties we would be glad to hear of them. Of course, if such a person also had a knowledge and interest in horticulture and gardening or could conduct a year-round membership campaign it would help.

How does a biennial differ from an annual? Gloria Adams, Greeley.

A biennial is a plant which, being produced from seed in one year, flowers, matures its seed and dies during the following year; while an annual is a plant that is raised from seed, grows, flowers, produces seed and dies within one year from the sowing of the seed.

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AUGUST GARDENING

AUGUST is usually hot and dry. Plants which have been properly trained by careful and thorough watering will survive this critical period, but those which have been pampered with daily, shallow watering are sure to suffer. Toward the last of the month it would be proper to begin to hold off the water a little on the woody plants so that they might begin to ripen up their wood ready for the frosts next month.

Weeding should not be such a problem this month. Most of the weeds should have been cleaned out weeks ago. We should be able to let down a little on our continual round of "weed and water, weed and water". The greatest danger now is that we will let a few weeds go to seed and spread seeds for next spring. Later in the month some gardeners advocate letting a few low weeds creep in to help dry up the soil and ripen the plants around them.

More and more, gardeners are learning the value of mulching. They may use peatmoss, leafmold, sawdust, leaves or manure. There are even mulching blankets of paper or glass fiber that will help to keep the surface of the soil from baking and of a more uniform temperature. They keep down the weeds also and with their decay give valuable fertilizer to the soil.

If you have kept at the war on insects as they appeared you should have the ordinary ones pretty well under control by now, but there are always new ones showing up which work especially at this time of year. Inspect all your plants every few days and start spraying before insects can do much damage. Take time to learn a little more about the habits of the common insects so that you can easily recognize their damage and know what kind of control to give them.

This is the time that your garden looks empty and colorless unless you have planned in advance for the heat-loving things to fill in the gap between the early and late flowers. Even the best planned perennial border needs a few of the summer annuals to fill in at this difficult time. Petunias, Zinnias, Calceolarias, Marigolds and Four-O'Clocks are all common flowers, but they enjoy this heat and require little care.

A garden may be beautiful because of its good plan, its good plants, its good maintenance, or better yet because of all three of these things. Neatness is the one thing that costs little and makes a great deal of difference. Take off the old bloom stalks and the plants that are entirely through for the year. Trim back the rampant things that are lopping over the walks, but do not cut off green, growing stems unless you are willing to forgo bloom the next year. Many plants, especially the bulbs like tulips, must store up energy for the next season's bloom by their growth after this year's bloom.

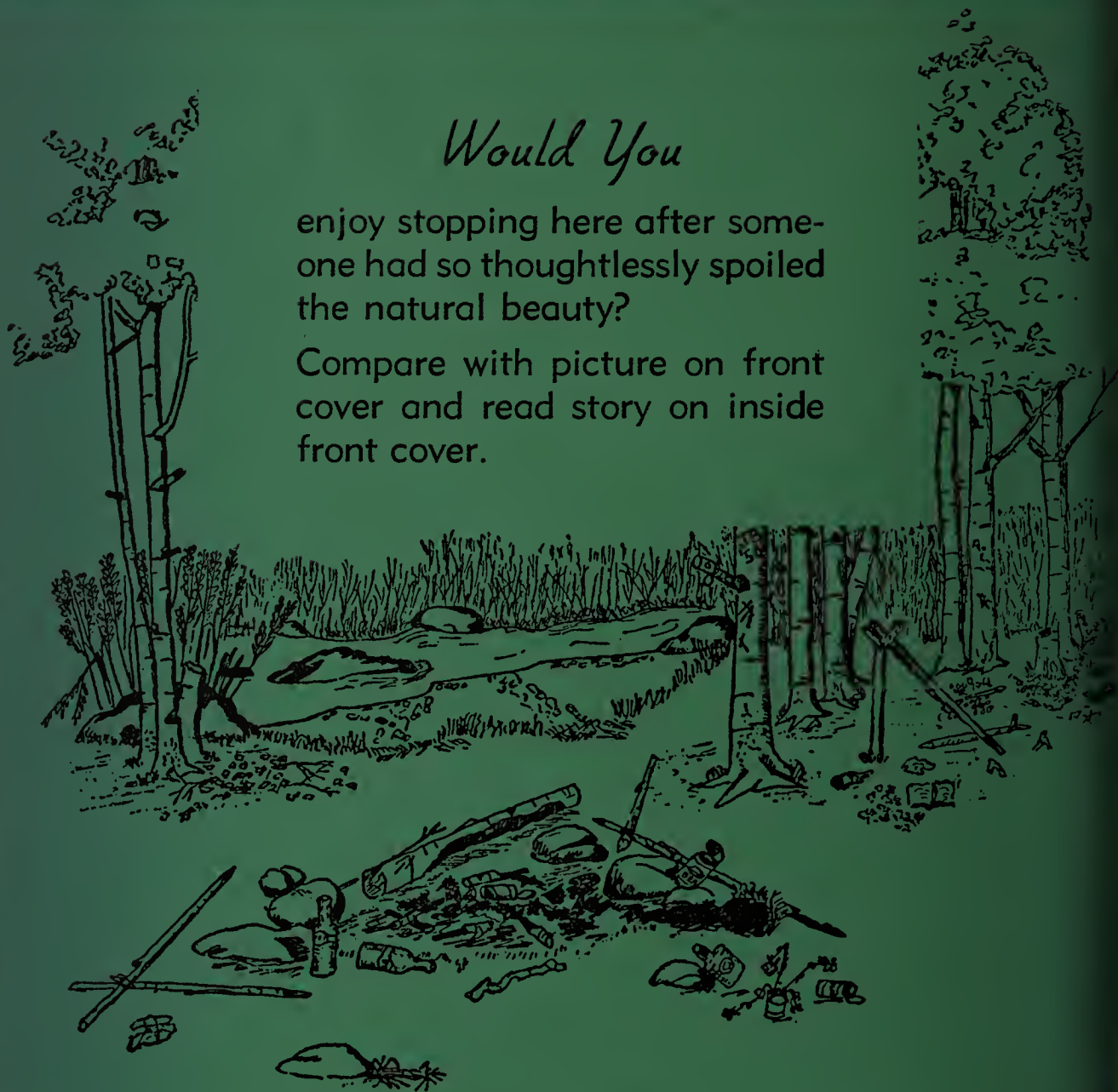
With the routine garden work letting up a little, now is the time to do those things that were neglected earlier—level up the flagstone walk, nail back that loose panel on the fence, patch the crack in the pool, paint the trellis, trim the dead out of that old lilac or edge the borders.

Try saving a few seeds of your really nice flowers. You can start them in boxes in the house next April. Sit down now and make a record of the successes and failures of your plants up to date. This will be invaluable to you next January when you are planning your new garden.

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September, 1950

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The Green Thumb

Vol. 7

SEPTEMBER, 1950

No. 9

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Planting for **WEATHER CONTROL**

For centuries people have complained about the heat of summer and the cold of winter, but until recently have felt that there was little that could be done about it. Now weather conditioning inside of houses and offices is becoming more and more common and this matter of weather control is extending out into the lawns and gardens.

Windbreaks of evergreens properly placed to turn aside the cold fall and winter winds prolongs garden pleasures for weeks and sometimes months. Frost pockets can be drained off thus lengthening the blooming season of your flowers into the autumn.

Shade trees around a patio make the temperature as much as 25 degrees cooler in summer and how much more enjoyment, health and happiness you get from the use of comfortable, well arranged home grounds.

There are many problems of planting for weather control that members of the Colorado Nurserymen's Association have studied and their knowledge and experience is yours for the asking.

COLORADO NURSERYMEN'S ASSOCIATION

See the February issue of the Green Thumb for list of members.



Colorado Forestry and Horticulture Association

Organized in 1884

"To preserve the natural beauty of Colorado; to protect the forests; to encourage proper maintenance and additional planting of trees, shrubs and gardens; to make available correct information regarding forestry, horticultural practices and plants best suited to the climate; and to coordinate the knowledge and experience of foresters, horticulturists and gardeners for their mutual benefit."

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SEPTEMBER SCHEDULE

- Sept. 10. Sun. Climb of Arapaho Peaks from Caribou near Nederland.
Sept. 14. Thurs. Horticulture House, 8:00 p.m. Rose Society.
Sept. 15. Fri. Horticulture House, 7:30 p.m. Mrs. Donald Spencer. "Presenting Pincushions of the Forest".
Sept. 17. Sun. Lake Edith. Fall Flowers, seed pods and aspens. Leave Horticulture House at 8:30 a.m.
Sept. 21. Thurs., 8:00 p.m. Horticulture House. Iris Society.
Sept. 22. Fri. 8:00 p.m. Horticulture House. Cactus and Succulent Society.
Sept. 24. Sun. Boreas Pass out of Como. Leave Horticulture House at 8:00 a.m. Visit the ghost town of Hamilton. Mr. and Mrs. Kessler and Mrs. Barbour leading.
Sept. 29. Fri. Horticulture House. Cliff Mann, "Care of Cut Flowers and Plants".
Oct. 1. Sun. Diamond Lake and climb of Arapaho Glacier.
Oct. 7. Sun. Joint trip with Gates to grottos and iron deposit pools at foot of Webster Pass on Handcart Creek. Leave Horticulture House at 8:00 a.m.

CUT FLOWERS CAN GIVE LONGER PLEASURE THAN YOU THINK

How often have you wished you might have the advice of an expert on the care of plants you receive from the florist? You may have that advice and the answers to questions which may arise. Mr. Cliff Mann of the Denver Wholesale Florists and the Director of the Colorado School of Floral Design speaks with authority on the subject of the care of your plants. He will discuss this subject with friends of Horticulture House on Friday evening, September 29, 7:45 p.m.

ROCKY MOUNTAIN HORTICULTURAL CONFERENCE

Committees are now working on plans for a bigger and better conference next year. The date has been set as January 2 and 3 and the place the new classroom building of Denver University which fronts on Civic Center. There will be outstanding speakers from several Rocky Mountain states as well as national authorities and many local experts. The educational and commercial exhibits will be more extensive and interesting. The annual meeting and banquet of the association will be held the first evening.



School grounds attractively planned and planted may do more than simply set off a nice building; they may be educational, with a variety of plants suitable for use in the community or for study by biology classes.

THE LITTLE RED SCHOOLHOUSE AND ITS OFFSPRING

THERE may be quite a bit of sentimentality attached to the "little red schoolhouse," with its "hickorystick" and its "good old-fashioned ruledays," but—would we really go back to it?

You know better! And so do our children! In June, vacation sounds like a most desirable time: there are so many things to be done, so many out-of-school activities! But there is a feeling cropping up, now and then, that it would be fun to go back, see the other children, say hello to the teachers, feel the atmosphere of the school, and all it stands for.

When September comes there is a real hankering for school; but it is not the old type of little red schoolhouse, that causes the hankering! Our modern schools have a "pull" that is far removed from the impression which the barren, unattractive and severe buildings used to make upon the young minds. No wonder they are glad to get back to a surrounding that often makes up for the every-

day drabness of many a home. Denver is fortunate in a tradition of attractive schools and attractive schoolgrounds.

Twenty-five years ago Denver was actually leading in its well-landscaped schoolgrounds, as it was in many other educational activities. That was the time when plans of Byers Junior High school were requested by foreign countries and when its school-ground plans were publicized in foreign literature. It was a time when Lake Junior High was known as the "most beautifully located Junior High school in the United States." And South High school was pointed out as a sample of what education can derive from such intangibles as tree and shrub collections and from surroundings that provide the proper atmosphere for a receptive mood in education. National school magazines, like the *School Board Journal* and *The Nation's Schools* requested magazine articles on "How Landscaped

Grounds Satisfy Educational Needs."

Let me take you to the grounds of South High school today and let me show you what a wealth of plant material is found there. It is a veritable showground of unusual trees and shrubs.

Our capitol grounds boast of such trees as the Ginkgo or Maidenhair Tree, and the large Hackberries and Kentucky Coffee Trees. All are found at South High. And in addition you'll find such rarities as Hickory, Yellowwood, Goldraintree and even a Redbud tree.

A number of different kinds of hawthorns are in evidence, different kinds of maples, and even an English Oak. Do you want to know the distinguishing marks between Ohio Buckeye and Horsechestnut? Both are

there. So are ashes, elms, lindens, poplars, locusts.

A trip around the South High grounds, in other words, means a condensed study of the majority of dependable trees growing in Denver.

The same thing holds true of the best shrubs used for home planting. A few, like *Viburnum carlsi*, are rare; this very desirable shrub is fragrant enough to be noticeable for almost a block as you pass along the street.

Well, you may say, that is interesting enough, but just what is the educational value of having a tree and shrub collection on a school-ground? After all, few students will go in for nursery practice, or for landscaping. Why bother other children with such things? They have

Schools are intended to teach a better way of living—how to get more of life's necessities and how to enjoy the finer things of life. Schools should set the pace for coming generations and demonstrate as well as teach the fuller and richer life.

South High School Denver.





There is an undeniable value to everyone in an association with plants. This planting around the Graland School in Denver helps to associate education with pleasant things in the child's mind.

little or no bearing on the three Rs.

A reasonable question.

Is there any good excuse for a school building being any more than an efficient training place for children, safe, well protected, well lighted, clean, and well equipped with all that is needed for proper "education"? Is there anything in the "atmosphere" of a school building and of its surrounding?

It depends somewhat on what we

Attractive playgrounds give children an incentive to work at the indoor assignments and give them pride in their school.



mean by "education." True enough, the three Rs can be taught—and were taught—successfully in the old little red schoolhouse—provided always that a good teacher was inside.

And yet, we now have up-to-date school buildings along with the good teacher. And we find that said good teacher can do an even better job in these improved surroundings. But in the meantime we have come to expect more than the fundamental teachings.

Does anyone doubt that a child gets a more wholesome attitude toward education if his school is a pleasant place to go to, and is located in a pleasant surrounding? Landscaped schoolgrounds do much to make a child want to go to school. As between the hickory-stick and the hickory tree I can't help but feel that the tree is the more effective. Don't you?

Now for a different angle. We often hear the complaint that we do not identify ourselves with our government, that we think of the government as "they" instead of "we". I have seen many an example where a clever teacher and a live school principal were able—through the schoolgrounds—to instill this idea of making a child feel as part of his school, of being part owner of it, of feeling a personal responsibility for "our" school and "our" grounds. Citizenship became a real experience, not merely a big word (and too often a dull, unpleasant one).

This is one of the "intangibles" of good education. Shall we touch upon a few others?

To many of us one of the most important attitudes to be instilled in a growing child is his relationship to man and to nature. You may use the religious terms if you prefer; the proper relationship to God and Man is the essence of religion, and that kind of religion has the sanction of

practically everybody to be taught in school.

Is there any easier way to create love of nature than by surrounding a child with an attractive bit of nature itself? We like people whom we can call by name and whose day-by-day life we know. So do we like other living things whose names we know and with which we grow up. Is it any wonder the "old swimming pool" has taken on a glamour far beyond its merit? We knew it intimately.

There is no question in my mind but that ex-pupils of lovely Lake Junior High school will carry a pleasant memory of their school with them. It is said that nobody can ever be quite unhappy if he has stored within himself a "picture-gallery" of pleasant experiences to which he can turn at will all through life. Now, if a simple thing like attractive schoolgrounds can furnish some of those mental pictures—isn't that a good investment in education—education from the broader viewpoint?

Other intangibles are those of health, preparation for worthy home membership, learning a worthy use of leisure (by contact with nature), instilling proper citizenship in the care of schoolgrounds—we might continue in many objectives of modern education.

All this may impress some "practical" people as the more or less harmless ravings of an enthusiast for school landscaping. The killing argument against landscaped schoolgrounds, especially in our arid climate, is always: "How can you make things grow with hundreds of youngsters romp-



Much of the work and expense of landscaping school grounds may often be done by the pupils themselves or their parents and they all may have a real picnic doing the work.



Well designed grounds may give visual evidence of the art theories which are taught inside.



The carefully planned planting of a community school may become the example which inspires a whole community to take pride in their homes and businesses, as gardening is a very contagious habit.

Cherry Hills school south of Denver.



ing all over the place?" and "Who is going to take care of things in vacation time, when school is not in session?"

This is not a dissertation on how to landscape schoolgrounds. It is not too difficult to plan schoolgrounds in such a way that both playground and ornamental ground have their proper place. It means cooperation with the architect from the very beginning. It means the proper location of the building. It means a sufficiently large amount of ground; it means proper



The average small community schools are, from the outside especially, the most dreary and uninspiring places in the district. This is not necessary.

are not playground. After all, a mother puts a stop to playing baseball in front of the mirror; justly so. The old gag still has merit: "there is a place for everything, if you keep everything in its place."

Maintenance in a dry climate? Perhaps the answer can be found in what has happened to Colorado's roadside plantings. Due to the war, among other things, little or no maintenance has been given to various

Certainly it would take a very unusual teacher to inspire pupils to better things in such an uninspiring building as this.

grading . . . and it means, above all, the proper attitude of principal and teacher. They in turn can create the right attitude of the pupils.

In other words: don't expect a child to stop running on the playground because there is a tree or shrub in his way, but also, don't let him run and romp in locations that

Hundreds of people see the outside of a school house to one who sees the inside and the community may often be judged by the appearance of the grounds around their school.



roadside trees and shrubs. In fact, here and there they have been subjected to unnecessary hardship by burning, chopping and what not. As a result, have they disappeared in these last dozen years? No, nature has applied a natural selection, and it is not difficult to see now, which plant material can "take the gaff" even under extreme hardships. Schools can profit by the result.

On the other hand, how easy it is in many spots to provide just a few of the hardy native plants around a school, a few ponderosa pines, a few sumac or skunkbush, mountain mahogany, wild roses, chokecherries or coralberries.

Then, don't be surprised if you find that help comes from most unexpected places: an interested school child helping along in their care, a mother donating some of her choice tulips, iris, spirea bushes, even a father—bless him—providing a blade or team for a few days to do the proper grading or cultivating.

Perhaps such unexpected results are part of the educational function of a school in the larger sense.

M. WALTER PESMAN.

NO, 'TAIN'T SO!

Is Colorado a combination of Manitoba, Maine, Michigan, Maryland and Mississippi?

According to so-called "hardiness maps" dividing the United States in so many zones of like plant material, we are finding ourselves in the same zones as the states mentioned above.

And according to some well-meaning "experts" we ought to be able to grow rhododendrons and azaleas, because they "grow as far north as Massachusetts."

In reality such maps with beautiful lines, called isotherms (lines of

equal temperature), have little meaning for us. Colorado's plant growth is not primarily limited by the average annual minimum temperature, on which such zone maps are based.

If a map could be made showing the acidity of the soil (the pH factor), the moisture content of the air, and then combined with such an isotherm map—we'd have something more dependable. Even then, the character of soil and the rainfall amount would have to be taken into consideration.

All of which should teach us that not only *gold* is where you find it, but that the best way to discover what *plants* will grow where, is to give them a try and decide on the basis of the try. Simple, isn't it?

SAWDUST MAY INCREASE SOIL ACIDITY

The acid content of wood sawdust varies with the species of tree from which it comes, according to a report made by M. M. McCool in the Boyce Thompson Institute quarterly. Numerous trees were tested including yellow pine, red pine, larch, locust, spruce, white-, red-, black- and pin oak, birch, elm, hemlock, redwood, maple and cypress. It was found that cypress had the lowest pH value, and the highest was that of hemlock. It was also found that the values of some of these became higher upon leaching with distilled water; hence the pH value in a soil is likely to increase with time as some sawdusts placed in the soil are leached by rain water. In some cases, addition of sawdust to the soil was proved to raise the soil's pH value, increasing the soil's acidity. Thus, the unfavorable results often obtained after adding sawdust to the soil may be due to its subsequent increase in acidity.

From the *Shade Tree Digest*,
May, 1950

NATIVE FLOWERS OF GARDEN VALUE

L. J. HOLLAND

IT is almost impossible to pick up a garden magazine that does not have an article about some plant that has been introduced from the Old World, but seldom a paragraph about American natives that respond reasonably well to average garden conditions.

True, a great many plants were originally native to this continent, but were first grown in gardens by Europeans and brought back to this country as garden subjects from there. A couple of examples are the Marigold and Dahlia, both from "South of the Border", and there are some of our own State that have fared likewise. It reminds me of the Biblical statement that "A prophet is not without honor, save in his own country".

This existing condition can be traced to several causes. Primarily, our forefathers were European immigrants, and brought seeds and plants from the "Old Country" that they grew in their gardens. Although the native flowers were considered very pretty, the ones they introduced were a sort of a tie binding them to the homeland. As the march of civilization swept westward housewives took with them seeds from "back home", and thus a tradition was established. It is not at all improbable that the early settlers of this region admired our wildflowers, but regarded them as pretty weeds. That this attitude is still existent today is proven by a lady, who, upon seeing a Plains Evening Primrose growing in a border said, "Oh, that's just a weed, grows everywhere". Weed it may be, but it is worthy of a place in almost any flower garden. Along about the close of the eleventh century Omar Khayam wrote that "Full many a rose is born to blush unseen and waste it's fragrance

on the desert air"; Yes, were Omar here today he could repeat those words.

Growing wildflowers in the garden is not as difficult as some would think. Most of them do better under cultivation than where they have to compete with larger and more aggressive plants for the available moisture and nutrients. Of course, the needs of each particular plant should be studied before attempting to grow them, but as a general rule plants of the Plains region prefer a neutral to slightly alkaline soil, while those from the mountains do best in a soil that tends toward the acid side of the scale.

Probably the most important factor is obtaining material for the wildgarden. Under no consideration dig a plant and transplant it to your border. It might be argued that where there are a great many of a certain species, one or two less would make no difference. Just suppose that everyone felt the same way, then how long would there be any for display. Too, all too many would dig a plant while in full bloom when the chances of its survival would be small, in fact,

Shooting Star, Dodecatheon redicatum



almost zero. Some of our natives may be bought from dealers, but most of them will have to be started from seed. Here, again, let me add a word of caution; do not gather seeds of our native plants unless they are quite common. If there is the slightest doubt concerning the frequency of their occurrence, give the plant the benefit of the doubt and allow the seeds to remain to self sow. However, since seeds of most of the plants mentioned in this article may be purchased, this offers no serious difficulty. Seeds of the perennial sorts had best be sown as soon as obtainable, some will germinate quite readily and get a good start before cold weather sets in; others will lie dormant until the next Spring before they begin growth, but nearly all will give some bloom the second season. The annual varieties can either be planted early in the Spring while the soil is still cool, or late enough in the Fall so that growth does not start. The more common kinds and those that have a long tap-root should be sown in the open ground, but the rarer sorts should have a cold-frame that can be shaded, or some similar provision.

Now for what and where to plant: For moist situations try the following. *Iris missouriensis*: Our only native *Iris* often grows in several inches of water in full sun, but does well in a moist location in average soil. Best in partial shade.

Blue-eyed Grass; *Sisyrinchium angustifolium* thrives under the same condition as *Iris*, but will tolerate a drier locale.

Tulip Gentian; *Eustoma andrewsi*: My favorite of the Gentian family, seems to absolutely demand that its feet be in water. Good for pools.

Troutlily; *Erythronium parviflorum* definitely should have shade from mid-day on. How I detest the inappro-



Tulip Gentian, Eustoma andrewsi

Snow Lily (Dogtooth Violet) Erythronium parviflorum





Red Columbine, Aquilegia elegantula



American Monkshood, Aconitum columbianum

priate common names — Dogs-tooth Violet and Adders' Tongue.

Violets: The best for the home are probably *Canadensis*, white; *biflora*, yellow; *pedatifida* and *retusa*, blue, and *palustris*, light blue. *V. nuttali* is of open plains and hillsides and likes sun and not too much water.

Shooting-star, *Dodecatheon redicatum*: Enjoys light shade. Not so large as *D. media*, but excellent.

Springbeauty; *Claytonia rosea*: Fairly difficult, but worth the effort. Has to have plenty of moisture and shade.

Now for those that revel in average to dry situations.

Columbine; *Aquilegia coerula*, our State-flower, needs more moisture and a more acid condition than most of its clan. Fades badly in full sun. The yellow variety, *A. chrysantha*, is much more amenable to cultivation.

Monkshood; *Aconitum*: Both the blue and the yellowish-white varieties, (*A. columbianum* and *A. ochroleucum*) prefer a little shade and some acidity. Often found together in the wild.

Chiming Bells: Our *Mertensia ciliata* is smaller and later than *M. virginica*, but has about the same requirements. I grow them together.

Leathercup; *Viorna jonesi*: in my opinion easily the best of the *Clematis* family. Sometimes called "Old Man" because of its seed pods.

Pentstemon: Some authorities list thirty-seven species native to Colorado, almost any of them suitable for the garden, but the two outstanding species are both indigenous to the part of the state lying south of the Arkansas River. *P. grandiflorus* is superb; up to four feet tall, with large azure blue to purple flowers. *P. ambiguus* is the Sand Pentstemon and about the baby of the family; almost procumbent, with almost thread-like

leaves and small, upfacing, Gilia-like flowers in pastel pink shades. Dainty and lovely. All pentstemons are of very simple culture, thriving in ordinary garden soil and full sun or semi-shade.

Golden Banner; *Thermopsis montana* of the mountains and *T. rhombifolia* of the plains are yellow pea-shaped flowers that should be better known. *Lupinus plattensis* makes a nice foil for these.

Evening Primrose: There are two closely related plants that carry this same common name that are easily grown. The Plains Evening Primrose (*Anogra albicaulis*) has white flowers about 2 to 3 inches across, while the Trumpet Evening Primrose (*Lauvauxia brachycarpa*) has golden-yellow flowers 3 to 4 inches across. Both delight in a rather dry, sunny situation. Both are low growing.

Plains Coneflower; *Ratibida columnaris*: The "cone" or disk flowers are purplish, cone about 1½ inches long, less than half that broad; the ray flowers, or as most folks call them "petals" are golden yellow. Variety "pulchella" has dark maroon petals. Very nice, about two feet high, or a little more.

Spiderwort. I cannot recommend the ordinary variety, but *Tradescantia occidentalis* var. *rubra* deserves a lot more attention. Rosy pink flowers that are quite a bit larger than the common blue sort. Foliage a darker green. Good.

Now let us examine the natives that are suitable for the rock garden in full sun. Plenty hot and a little dry, if you please.

Easter Daisy; *Townsendia* spp: These are for the most part low growing plants that, as their name indicates, bloom in early Spring. *T. excapa* has white flowers while *T. exima* has purple. Both are practically stem-



Red Beardtongue, Penstemon torreyi



Cone Flower, Ratibida columnaris



Puccoon, Lithospermum

less. *T. grandiflora* is somewhat taller and much later.

Trumpet Puccoon; *Lithospermum*: About 6 inches tall with a cluster of lemon yellow trumpets at the top. *Linearifolium* is the best species.

Verbena bipinnatifida is a hardy plains dweller that has been used extensively for hybridizing.

Poppy Mallow; *Callirrhoe involucrata* has been described in previous issues of GREEN THUMB. Save a spot for it.

The foregoing list is far from complete, but if you grow half of these you will become a rabid wildflower enthusiast and get acquainted with the many others.

A TIRED SOIL

M. WALTER PESMAN

A GOOD carnation grower changes his bench soil after the crop has been harvested. In many cases fresh soil is brought in from the prairie. Where that is not feasible, the old soil may be worked over, aired, sterilized, and "put back in Condition".

And yet, that very same soil discarded is excellent for garden use, and can grow most things to perfection.

But it is tired of carnations.

A rose bed after a number of years gets tired of roses.

A street tree may "poison" the ground to such an extent that it is tired of the particular tree that grew there for years; a new tree of the same species is apt to have difficulty starting.

If you "know it all" you'll have an answer in explanation. "Diseases and insects," you'll say, "remain in the ground, and will attack the new

plant of the same kind. Quite simple!"

Is it? Then why will the addition of nothing but charcoal,—carbon—, often suffice to overcome the difficulty? There is little or no fertility in carbon, and it is not an insecticide.

As long as forty years ago this problem caused a controversy between fertilizer experts and honest doubters. Merely adding the necessary chemicals does not "untire" a soil, mere sterilization does not restore it. In addition to fertility problems, in addition to insect and disease worries, in addition to bacterial activity,—something happens to a soil that is cropped to one thing only.

Some authorities claim that a definite poison is given off by a growing plant that will stop future growth of the same kind. Much experimentation and research is needed in this field before the final answer is found. The "know-it-all" often knows very little.

In the meantime the practical gardener wants to find out what to do about it. A few useful hints can be given.

Such annuals as asters, sweet peas, tomatoes and potatoes are almost sure to "poison" their soil. If at all feasible it is best to change their location from year to year or at least every two or three years. The same spot may be all right again after some other crop has been grown on it.

A rose bed that "runs out" can be renewed by changing the soil to a depth of two feet if possible; it may be easier to place it in a different spot for the continuance of first class roses.

If a new shade tree is to be planted in the place of one that died, it is definitely best to change the soil, giving the newcomer a fair chance. The same thing holds for renewing certain choice flowering shrubs; others seem to have no difficulty.

Chemical fertilizer alone will seldom restore a "tired" soil; organic fertilizers and soil "ameliorators" may be more effective.

If you know of remarkable "cures" in such cases, do not keep them to yourselves, sometimes even "wild" ideas may be found to have merit or may give a hint for further experimentation. Who would have thought that certain garden practices of the past were based on supplying growth hormones, discovered later?

Many of our older gardens in Denver have that forlorn look, not only due to overgrown plant material, not a result of lack of fertility, but partly a consequence of "tired" soil. It will take the combined efforts of scientists, practical gardeners and inquisitive persons to find out what can be done to give it new youthful vigor or even to supply the "rest that refreshes". (Commercials are invited to contact us for an appropriate plug).

Questions and Answers

Question: I should like to try an herb garden. Please give me the names of about a dozen herbs which I can raise from seed. Then too, I am not familiar with their use.

Answer: Anise—Used as a cordial, also for garnishing and flavoring. Seeds have an agreeable, aromatic taste.

Borage: Has star-shaped blue flower. Leaves and flowers have a cucumber-flavor. For salads and cold drinks.

Sweet Basil: For soups, stews and highly-seasoned dishes.

Caraway—Used for bread, pastry, etc.

Catnip: Used for flavoring.

Chervil: (Annual) Parsley-like leaves for flavoring salads.

Chives: Leaves used for salads. Also for flavoring soups and stews. Fine to flavor fresh-fried potatoes, good for top of cooked rice.

Coriander: The seeds are used for flavoring and confectionary.

Horehound: For flavoring candies, etc.

Sweet Marjoram: The leaves and the ends of the shoots are liked for seasoning in summer and also dried for winter use.

Broad-leaved Sage: Perennial, for seasoning.

Summer Savory: A hardy annual. The dried stems, leaves and flowers are used for flavoring in dressings and soups.

Herbs are divided into at least three groups—aromatic herbs for fragrance; culinary for flavoring in cookery; the medicinal herbs which still play an important part in today's medicine; and also those grown for coloring which still give us some of our best dyes.

H. F.

A MOST UNUSUAL GARDEN

The pictures used here were taken in the most unusual garden of Ramon Kailey. Late and early hours make up his garden story—he lives in two worlds; always in his garden before seven and often after eleven at night, he spends the time in between running a direct mail advertising business, the Miller Mimeo Mart, in Denver.

With the city a too-restricted locale, he felt the need of a piece of ground where he could satisfy a tremendous urge to grow things. He wanted a garden so he began to do something about it when he left his home in the city and took over 10 acres on Evans Avenue, west of Ar-





vada—10 acres of nothing but weeds and a stubborn soil. All by himself with not a single hand to help he spent weeks and months tackling a run-down country place.

As you enter the place you see water rushing, twisting and curving, from the north to the south end of the garden—you would scarcely believe it is actually 200 feet of the Farmers' Highline Ditch. You should see this and see how ingeniously Mr. Kailey has turned an old ditch which is fed from the same reservoir from which neighbor ranchers receive water for carrots, cauliflower and cabbage, into a sunken garden, made from moss-covered rock, trucked in from the mountains. The planting is a picture—botanical tulips, hyacinths and daffodils, galanthus, chionodoxa, scilla,



muscaria, leucojum and all those other early bulbs that make May the month we wait for all winter. Summer and fall follow here with their appropriate wealth of bloom.

Perhaps a special love for gardening developed when Mr. Kailey took three years of floriculture at the Freemont High School at Los Angeles. His plan for a new rose-plot in the spring is borrowed from that of the rose garden in the Exposition Park in that city. Telling what he will do in the future sounds like a fairy tale. A new lattice fence on the west separates the utility garden from the ornamental. To the east there is a perennial border with bulbs, Iris, canterbury bells, foxglove and fall chrysanthemums. There is a new summer house too where the Kaileys and their friends may enjoy outdoor eating and which later will be planted with hardy plants for shade.

I could not help but wonder, as I walked through the garden if, perhaps it was started with seeds and a few plants which later could be divided. "No," Mr. Kailey said, "it was started with a bang, at the expense of much of my solvency," with great groups of peonies, Painted Dai-

sies, Lupines, masses of Iceland Poppies and many others.

With this garden of considerable circulation, there are other live things besides plants—guinea pigs, chickens, turkeys, geese, wild pheasants, cats and 2 whippet dogs which commence to wag their tails as soon as they hear the car turn in at the white gate. This place is full of personality and character—oh, yes, and there are fourteen proud, Burmese peacocks strutting their iridescent magnificence over the velvety green lawn.

Although a veritable Beau Brummel, Mr. Kailey knows how to dress for the garden. "Don't try to work in unsuitable clothing," he advises, 'easy, broad, solid shoes—not any old rundown pair—should be considered as essential as a spade or a rake."

Mrs. Kailey, who works with her husband on California street, doesn't care a bit for outdoor gardening—flower arranging is her hobby. "Arranging flowers," she says, "is an opportunity to really create and bring into the home something that is a part of the eternal richness of life."

This is just the beginning of the story of Ramon Kailey and his dream.

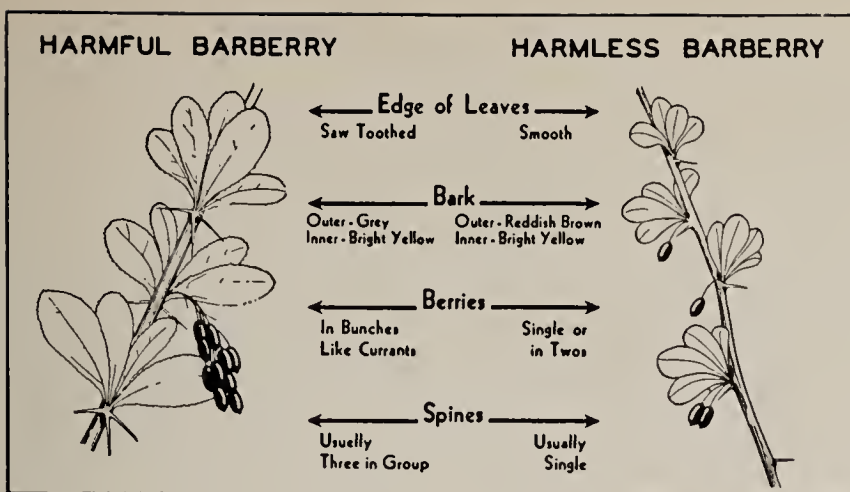
HELEN FOWLER.

THE VILLAINS OF THE BARBERRY FAMILY

By E. A. LUNGREN

THERE are some 160 known species of barberry bushes. Of this number there are 106 species which are susceptible to the stem rust fungus. Stem rust is a disease of small grains caused by a tiny fungus and can cause disastrous losses in grain crops. This disease can develop each spring on susceptible barberry and spread from there by wind-borne spores to wheat, oats, barley and rye.

It is controlled by the eradication of barberries. In Colorado there are only two kinds of barberry of major importance in spreading stem rust. The common variety, *Berberis vulgaris*, and the native species, *Berberis fendleri*. The common barberry was introduced from Europe by the colonists and was brought west by early settlers. From these plantings it escaped from cultivation and established



itself as a wild plant in woodlands, pastures and other uncultivated places.

Not all barberries are harmful. There are several varieties of the Japanese barberry commonly grown as an ornamental bush and sold by most nurserymen. They are the red, green and purple varieties of Japanese barberry. The mentor barberry is also resistant to the stem rust fungus. The leaves of the Japanese barberry and its horticultural varieties are small with smooth edges. The outer bark of the stem is reddish-brown and the inner bark is bright yellow. Spines are usually single, and bright red oval berries are produced singly or in groups of two or three. The sale of these harmless barberries is regulated by state and federal quarantines.

The common rust spreading barberry, *B. vulgaris*, is easily recognized. It is an erect bush commonly six or more feet high when mature. The outer bark of the stem is grey, the inner bark yellow, and the edges of the leaves are saw-toothed. Usually there are three or more spines under each group of leaves. The red berries hang in bunches as currants do in the fall.

Eradication of the rust-spreading barberry helps control the destructive stem rust disease and protects the food economy of the nation. Since the beginning of the control program in Colorado, over 95 per cent of the

state is now on a maintenance basis. Even in the areas where first treatment has removed immediate danger to the crops, periodical rework is necessary until there is no danger of barberries reappearing. The barberry seed has been found to remain viable in the soil for a period of 12 years. As areas have been cleared and reworked with no evidence of reappearing barberry bushes, the territory is placed on maintenance.

Common Barberry, Berberis vulgaris



THE NEED FOR STATE PARKS

By HAROLD LATHROP

THIS region has been graciously blessed with the grandest of mountain ranges, superlative peaks and wonderful mountain streams and lakes. They are surrounded by great forests. All such natural characteristics afford a multitude of opportunities for recreation with rod, gun, camping equipment or just a picnic basket. In the National Parks and Forests, camping and picnic facilities have been provided.

The National Parks have been established to perpetuate some superlative example of God's Handiwork which we all recognize as the fundamental philosophy of the National Park Service. Even in the preservation of the Rocky Mountain peaks in their pristine glory or the Geysers and Hot Springs of Yellowstone or the great underground rooms of Carlsbad or the kaleidoscopic colorings on the walls of the Grand Canyon, there has been the necessity for some development of facilities such as camp grounds, trails and accommodations by which the public might better enjoy such wonders of Nature.

You might ask why these Mountain States should acquire and develop areas for state parks when the Federal Government controls such a vast amount of recreation wilderness in the states such as National Forests, National Parks and Monuments.

The entire Nation recognizes the Rocky Mountain Empire because of its outstanding recreational opportunities, but too much emphasis has been placed on expecting the Federal Government and commercial enterprise to do all the providing. However, since state parks can and do play a very vital part in providing for state-wide recreational opportunities

throughout the nation generally, it seems only reasonable that the states in this vast Empire should recognize their short-comings and demand more in the way of state park developments which would furnish a part of the sorely needed expansion of facilities for healthful outdoor recreation.

It is true that the National Parks and National Forests in this Great Rocky Mountain Empire are providing many facilities, but they are only a fraction of those which are being demanded. During the height of the vacation season last summer, accommodations were grossly inadequate to meet the needs of tourist campers and out-of-state visitors. Consideration must be given the demands of people who expect to find recreational accommodations for from one day to several weeks at a time such as are provided in state parks of their home states. What about the people of the Rocky Mountain Empire who live too far from the recreation areas which have been established by the Federal Government or the limited developments by some of the states? How can they take advantage of the recreational opportunities for that holiday picnic or that weekend camping trip without having to make a long drive?

Perhaps I should define for you the term "state park." In my mind, it is a typical portion of the state's original domain of adequate size, whereby a small portion may be provided for concentrated use and the remainder preserved in a primeval condition accessible only by a system of foot trails and waterways by which the present and future generations may study the flora, fauna and geologic structure of a beneficent nature "unspoiled, unimproved and unbeau-

tified" by man's attempt to improve on the work of God.

In Oregon where an even greater area has been dedicated for National Parks and National Forests than is the case here in Colorado, over 180 State park areas have been established totalling more than 42,000 acres and for which they will expend \$764,000 for maintenance, operation and improvements during the current year of 1950. The state of Washington with approximately two-thirds as much Federally-owned land as Colorado, has developed a state park system comprising 54 units with over 60,000 acres and with a budget for the current biennium of two and one-quarter million dollars for operation, maintenance and expansion. Montana with more Federally-owned land than any other state in the region, established a new state park system during the past biennium and the 1949 legislature voted the largest appropriation in its history for state parks. Why have these states done this? The answer is simple—to provide more outdoor recreational facilities of a type not generally provided by municipalities and so distributed as to be within easy reach of the greater portion of their citizens.

Forty-seven of the forty-eight states of this Nation have taken steps to establish state parks systems embracing outstanding areas of scenic, historic or scientific value. They might have taken for granted that the superlative scenery of sections of their states would always be available for healthy outdoor recreation. They might have assumed that there was little need for reserving portions of their commonwealths because of their scenic, historic or scientific values. However, being mindful that progress is constantly on the march, steps were taken to establish state park systems

in order that future generations might enjoy some of the same recreational privileges and opportunities as existed then or now. They might have foreseen how selfish interests are quick to realize commercial advantages of many God-given spots, or others, desirous of keeping such for their own selfish enjoyment, or that esthetic values are too often disregarded in this constant march of civilization.

Most states have considered it their duty to acquire and develop outstanding recreational areas in the name of the state and for their people's enjoyment and use, now and for posterity. They have not expected their Federal Government or their larger communities to do the job. The complexities of modern life itself create the need for recreation in God's Great Out-of-Doors. The strain of urban living and its quick pace in business and social activities makes escape necessary to a person's well being. This is an age in which individual recreation is coming into its own, when crowds are dispersing and individuals or small groups are seeking rest and play. It is the age when that mysterious renewal of spirit which comes from carefree pursuit of the outdoor activity which suits one best is mandatory upon our citizenry. This is truly a new era for it marks a chapter in the growth of American culture and the development of American life.

Theodore Roosevelt said, "There is nothing more practical than the preservation of beauty—than the preserving of anything that appeals to the higher emotions of mankind." How very true this statement is and to that end we must train our sights. The impetus apparently must come from organizations and groups of people who recognize such needs.



THE USEFUL FAMILY OF BELLFLOWERS

MYRTLE ROSS DAVIS

THE Campanula (Latin for little bell) or bluebell family is very large. There are said to be as many as 250 species and many of the species have several varieties. L. H. Bailey in his "Cyclopedia of Horticulture" lists about fifty cultivated kinds. He says, "The genus Campanula is extraordinarily rich in flowering plants of merit. The alpine section is distinguished by a charming grace both in character of growth and size and bearing of flowers. The peach-leaved class, *C. persicifolia*, is characterized by the noble and beautiful form of single and semi-double blossoms carried by thin erect

stems 2 to 3 ft. high. The luster and clearness of the tints of the bushy biennial medium and calycanthema type are remarkable while the rambling habit and the marvelous floriferousness of the varieties *C. isophylla* and its descendant, *C. mayii*, indicate the wide range of ornamental usefulness of bellflowers. Considering the good lasting qualities in a cut state and the great popularity of the flowers of the long stemmed sort for indoor decoration it is safe to say that campanulas will steadily gain in importance as material upon the florist counter as well as for garden planting".

As in all large families there are always some black sheep. One of the most undesirable members of the family is *Campanula ranunculus* or Rampion bluebell. It is really quite beautiful with its tall spikes of lavender flowers but it is surely a pest for it spreads so rapidly that it will choke out most other vegetation in the area. None of the modern 2,4-D weed killers will affect it in the slightest. It has large radish-like roots and the only way one can get rid of it is to dig up all the soil and sift out the roots.

One of the finest members of the family is the Carpathian bluebell. It is a dainty medium height perennial with roundish leaves and many clear blue bells borne on very slender stems. It is one of the best for the perennial border.

Campanula rotundifolia is another good member. One would think it was misnamed for the leaves are very long and narrow but the root leaves in the early spring are round. It also has many blue bells on slender stems but its habit of growth is not as neat as the Carpathian bluebell as it sometimes falls over and becomes a bit tangled. It is commonly known as the bluebell of Scotland.

Some very fine dwarf forms are *C. portenschlagiana*, *C. isophylla* and *C. mayii*. All are very fine for the rock garden or rock wall. *C. isophylla* will be completely covered with light blue star-like flowers all during the month of June. The leaves of *C. mayii* are soft and wooly. It is very choice. *C. portenschlagiana* is darker blue and not as unusual looking but it is very

hardy and a very good rock garden plant.

Campanula persicifolia or Peach-leaf bluebell has blue or white bell-like flowers and peach shaped leaves. They grow quite tall and are very showy. Sometimes they have a tendency to fall over and have to be staked. A new variety called *Grandiflora* has larger flowers and it quite an improvement over the old varieties.

Campanula glomerata is a very common and easily grown species. It has dark purple flowers which come in dense heads at the end of the flower stalks. Sometimes the flowers are lighter colored or even white but the typical common one is deep purple.

Probably the best known member of the family is *Campanula medium* or Canterburybell. It is the one which graced the gardens of our grandmothers. Being biennial it must be grown one year to bloom the next and then it is through. If it is allowed to self-sow it will keep coming year after year. The double and the cup and saucer varieties are very lovely and make excellent cut flowers.

One of the best, *C. pyramidalis*, is known to be too tender for our climate but it makes a splendid hot house plant, good for cutting. Blue flowers are always in great demand for gardens so we should look into the bluebell family and try more of them.

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 Mrs. Frank McLister

BOOK REVIEW

Greenhouse Gardening for Everyone.
 Ernest Chabot. M. Barrows & Co.,
 New York City, 1949. \$4.00.

"Greenhouse Gardening for Everyone" is a very timely addition to the Helen Fowler Library. With the great increase in interest about gardening under glass this book will answer many questions whether your hobby is orchids, chrysanthemums, carnations, geraniums or camellias. Mr. Chabot describes in detail the various kinds of greenhouses, the best and most economical methods of heating, of ventilation and automatic watering. The book contains calendars and tables for planting both in the greenhouse and garden frames.

It lists the many kinds of plants which can be grown under glass, gives instructions on how to force bulbs into bloom in midwinter. All this, plus other facts one needs to know to run a greenhouse successfully, makes this book the ready reference for all greenhouse gardeners.

JANET CHAPMAN

East of the Andes and West of Nowhere. Nancy Bell Bates. Charles Scribner's Sons, New York. 1947.

Who is this author and what is her story? She is the daughter of the famous David Fairchild and the granddaughter of the equally famous Dr. Alexander Graham Bell. This book, however, is proof of Nancy Bates' ability as an explorer and author in her own right. She is the wife of Marston Bates whom she is like in temperament and inclination and whom she assists in his work as a member of the staff of the Rockefeller Foundation.

The scene is laid in South America. It is the story of how two people grew right into a new primitive environment and what they saw as they explored the country, the jungles, the llanos and what plant life they found there. Though she doesn't put much emphasis on it she tells of yellow fever and its relation to monkeys and mosquitoes.

Nancy Bates is young and enthusiastic and she has put youth and enthusiasm into this very entertaining book. The story is even whimsical at times. There are many illustrations and it is, what is most important, well indexed.

H. F.

THE HERBACEOUS BORDER

By FRANCES PERRY

Here are the first words of the introduction of this book, "Strength levels grounds, art makes a garden there."

The author is in the family of one of the most famous hardy plant specialists of this century, Mr. Amos Perry. This may or may not account for the excellency of this book. It is written for those that know little and also for those that know much of

gardening. It is not so easy to select the right place for the perennial border on your property, much less to select suitable plants and fit them into an artistic color arrangement. How many, working in gardens today, know plants well enough to provide for continuous bloom in the border—from late April to frost-killing time? She would make us love a garden at the very beginning. In her preface, Mrs. Perry writes, "Disillusionment and disappointment beset the traveller on life's road, but the philosophy of the gardener finds comfort in the knowledge that there will always be flowers, and in the changing beauty of the season." "Choosing only hardy plants", she says, "the gardener will have little wintering problems; there will be color thruout the season, and after the initial outlay, there should be no great expenditures of money nor work."

The best plants for the perennial border is not only listed at the end of the book, but described individually in an alphabetical list. There are eight drawn border plans—All-Season, Double-sided permanent, Town garden, Two-sided, Late, Special Color drawings and one very valuable for shade.

After finishing reading this book, I wondered if there was another word to be added for help to the builder. It is full of interesting history. We are told it was not until 1890 that we hear the herbaceous border referred to by its now everyday appellation, George Nicholson Curator of the Kew Gardens, advised that in planting out, "the best results are obtained when the border is mainly made up of hardy herbaceous perennials."

If I were making a special study of the hardy border, I should want to possess this small volume.

Your Trees

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LEAFY EXPANSE

How many leaves does a tree have, and what is its total leaf surface area? Here are some figures gleaned from various sources: an apple tree, 50,000 to 100,000 leaves; a sugar maple 50 feet high, 162,000 leaves with total surface area of 14,930 square feet; an oak, 700,000 leaves, and a mature American elm is said to have over 5 million leaves. Edward A. Connell, arborist, Stamford, Connecticut, made some measurements of leaf areas of several tree species, and in *Trees* magazine reported the results as follows: Norway maple, 25.855 sq. in.; red oak, 19.09 sq. in.; ash, 7.47 sq. in.; dogwood, 5.79 sq. in.; elm, 5.57 sq. in.; hickory, 17.51 sq. in. If these figures are correct, an elm has enough leaves to cover more than four acres of ground or nearly one mile of a 40-foot highway. No wonder we have leaf-raking troubles in the fall!

From *The Shade Tree Digest*,
May, 1950

We are sorry to announce that Earl Sinnamon has left the position of City Forester. His work in that capacity has been of the highest quality and he has done a great deal towards setting up a modern forestry program for the City of Denver.

However, we feel confident that Mr. Sinnamon will be a valuable asset in the new enterprise that he is about to take up. As of the first of September, he will be working with Jack Harenberg at The Garden Shop on 140 Cook Street. Mr. Harenberg will be able to concentrate all his efforts on the designing of gardens. Mr. Sinnamon will specialize in perennials, potted plants and so forth as well as shrub and tree maintenance. We most certainly wish the very best of good fortune to them both in their new venture.

A STAR PROGRAM

Have you ever stroked a porcupine? Or fed one a carrot? Mrs. Donald Spencer will be "Presenting the Pin-cushion of the Forest" on September 15 to open the Fall series of Friday evening programs at Horticulture House. Every one who has read the fascinating article which Mrs. Spencer and her husband have prepared for the August number of *The National Geographic Magazine* will want to be on hand when she introduces some of her little pets in person, and shows her color movies of their activities. This is a program which the young fry would enjoy especially.

Mrs. Spencer really knows her porcupines, for she has assisted her husband for several years in his work as Biologist in the Wild Life Research Laboratory of the U. S. Fish and Wild Life Service. Her experiences in catching, raising, and studying these little-known residents of our forests can only be matched by some of her tales about her mercy missions to rescue various unhappy Denverites from their startling and unwelcome visits. September 15 promises to be a fine large evening so don't miss it.

Horticulture House plans to have a slight change in time schedule for these meetings. The program will begin at eight o'clock sharp, but Horticulture House will be open at seven-thirty, so that any one who wishes to come early for a visit with other green-thumbers, or to settle horticultural problems may do so. There will also be opportunity to ask questions and to visit after the program.

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TIMBERLINE

Black pillars hold up the sky,
 And in the mountain meadows below
 The columbine and the aster grow.
 'Tis a giants' playground,
 Where boulders ridged and gray
 Are strewn about
 Like massive croquet balls
 The players had dropped one day—
 And gone away.
 Like skyrocket in July,
 Blaze red elephants, snow balls, paint
 brush,
 Violets, marigolds—o'er the hush
 Whines the wind on the cliffs
 Above with their shelving of
 Eternal snow
 Like layer-cake frostings.
 Is it the birthday of Jove
 They celebrate?

The wind moans through the scrub pine
 and cedar,
 The wind wails past the timberline height—
 Dwarfs in a playground of giants,
 Life that is caught up in twilight.

Glacial lakes reveal a world as deep as high
 And the mountains in them fall into the
 sky.

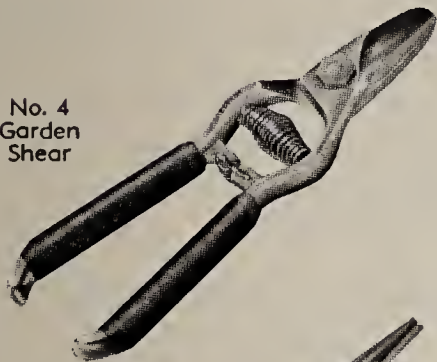
Cloudy veils creep through the mountain
 spurs and archways
 Like ghosts through cathedral windows.
 The wind shrieks through the chasms and
 ice-fields, sounding the
 Pipe-organ of the universe.

Behind some dusky spire does the earth
 drop sheer,
 Ice-mists tumbling down to the darkness
 vast—
 Sometimes, does the knotted, straining
 hand appear
 Of Atlas, on whose back the load is cast?
 If so, I will stop here—
 I know that I should fear
 To look
 Over.

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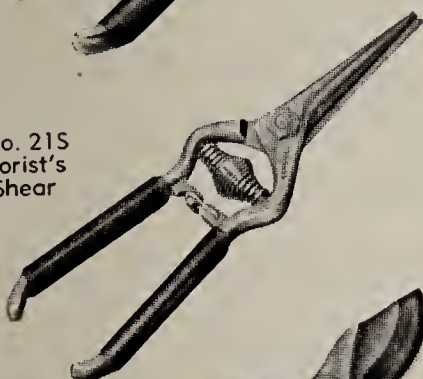
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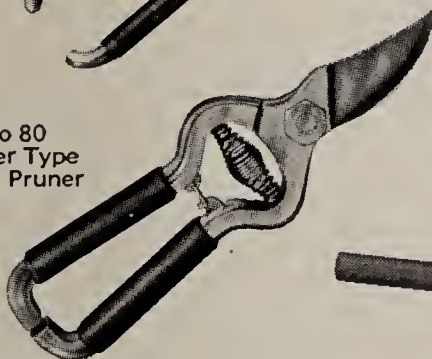
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SOME REFERENCES ON ROCKY MOUNTAIN BOTANY

Compiled by RUTH ASHTON NELSON

DURING the eighteen years since the booklet, *Plants of Rocky Mountain National Park* was prepared much critical work has been done in systematic botany covering different groups of plants occurring in this area. Also during these years the two manuals on which we depended for an understanding of the classification of Rocky Mountain plants have become out of print. Some of these papers are more technical than others but all hold some interest for the lovers of Rocky Mountain plants.

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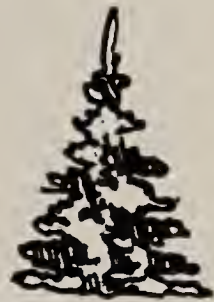
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SEPTEMBER GARDENING

Published first in September, 1944. We think it is worth repeating.

Frost can be expected sometime in September. It will put a stop to the growing of all tender plants. It is then time to begin to harvest and clean up for the season. There is still much gardening work to be done. Don't let your interest lag now. To make it easy for you to plan the necessary fall work we have arranged an easily remembered list below.

STUDY If you would like to develop a Greener Thumb plan now to take up some phase of horticulture for study this fall. While the successes and failures of this year are fresh in mind, decide that you will learn more of the "why" of growing things. It may be that you are most interested in roses, or evergreens, or insect control, or fertilizers. Get all the literature available on the subject and "go back to school" this month.

ENJOY The most strenuous work of spading, weeding and watering is now about over. Take time to straighten up your back, look around you and enjoy the results of your season's work. Arrange convenient seats where you can sit and see your garden. Look over the gardens of your friends and neighbors. Arrange for a picnic of several Green Thumb friends and their families.

PLAN Now is a good time to make notes ON PAPER of things that you want to improve another season. When the gardening fever hits you next spring it will probably be too late to move plants. Now is the time to make definite plans for new plants and new arrangements of existing material.

TRANSPLANT Many perennials should be moved now. Such rampant growers as shasta daisies and iris can be divided now before they crowd out nicer things. Many other perennials have bloomed and can be moved to more appropriate locations. If it becomes necessary to move peonies, oriental poppies, bleeding hearts, rhubarb or asparagus it should be done in the fall. Some shrubs and evergreens can be moved now if it is necessary and if they are carefully handled. It is much better, however, to wait until they have become dormant. If tulips, narcissus and other fall bulbs have been in for several years and need dividing, now is the time to do it. They may be planted right back in their new locations.

ENLARGE Fall is a good time to make arrangements for larger areas to accommodate those features which are most wanted. Take out a useless poplar and make more room for garden. Add a strip of lawn where weeds once grew. Lay a good flagstone walk, or add a needed platform, wall, pool or fireplace. Put up some bird shelters and feeding platforms. New lawns may usually be successfully planted between Aug. 15 and Oct. 15.

MULCH Vegetable and perennial tops will soon be dead and may be cut off: tree leaves will soon begin to fall and lawn clippings will accumulate. Unless full of insects and disease save all these. Use what is necessary to mulch around perennials and shrubs, and pile the surplus in an odd corner for future use. The decomposition of the compost pile will be hastened by keeping it moist, by turning it over every few weeks and by allowing ventilation under the pile through an old pipe or tile. Proper mulching will do much to correct our two greatest gardening difficulties in Colorado: plants drying out in winter, and the lack of humus in our soil.

BURN The smell of burning leaves is always the sign of fall. We all get the urge to clean up now, but consider carefully before burning any leaves or plant tops. If they are infested with disease or insects, burn them, but otherwise save every scrap for mulch and compost. Don't forget the few weeds like dandelion, dock, wild lettuce and parsley which have been missed and are now in seed. Digging them out and burning them will prevent a lot of weed seedlings next spring.

EXCHANGE Revive the old gardening custom of swapping. Take a newcomer some of your surplus perennials, and learn new tricks in gardening from him. Exchange some seeds of your fine zinnias and beans for some of your neighbors' squash and cosmos. Save seeds of extra nice plants for your own use next year and as trading stock.

RAKE Of course we rake in fall. A little cleaning up now will last all winter. Nothing improves the appearance of a garden more than keeping it neatly raked. Save all leaves and plant tops for the compost heap. A few old dead stems and rubbish look bad, but it is not necessary to keep every single leaf off a lawn or rake everything out of a flower bed. Let the winds scatter and pile a few leaves where they will.

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The Green Thumb

Vol. 7

OCTOBER, 1950

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*Gate shown on front cover leads to the attractive garden of Mrs. E. W. Hughes,
Colorado Springs.*

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Colorado Forestry and Horticulture Association

Organized in 1884

"To preserve the natural beauty of Colorado; to protect the forests; to encourage proper maintenance and additional planting of trees, shrubs and gardens; to make available correct information regarding forestry, horticultural practices and plants best suited to the climate; and to coordinate the knowledge and experience of foresters, horticulturists and gardeners for their mutual benefit."

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OCTOBER SCHEDULE

- Oct. 1—Sun. Diamond Lake and climb of Arapaho Glacier.
- Oct. 6—Fri. Association Picnic at City Park. Bring the whole family. See details on opposite column.
- Oct. 8—Sun. Joint trip with Gates to grottos and iron deposit pools at foot of Webster Pass on Handcart Creek.
- Oct 11—Wed. Start of course in "Plant Ecology," (relations of plants to their environment), 7:30 p. m.
- Oct. 12—Thurs. Rose Society meeting at Horticulture House, 8:00 p. m.
- Oct. 13—Fri. "Sticks and Stones and Weeds and Seeds." Mrs. C. Earl Davis and Mrs. Hance talking on arrangements. 8:00 p. m. at Horticulture House.
- Oct. 15—Sun. Elk Creek Falls by way of Shaeffers Crossing. Dr. and Mrs. Shubert leading.
- Oct. 22—Sun. Devil's Head via Sedalia and Jarre Canyon. Easy walks along the foot trails.
- Oct. 27—Fri. Mr. McEwan. "The Lighting and Heating of your Winter Plants." 8 p.m. at Horticulture House.

ASSOCIATION PICNIC

The Association Picnic will be held at City Park Sept. 6, and it is for the whole family. We will meet on the north side of the museum at 4:00 in the afternoon for tours of the proposed arboretum and zoo. Supper will be at 5:00, bring your own picnic. Coffee will be provided at a nominal fee. After supper there will be entertainment at the museum. We hope this will be a large gathering of "green thumbers" who will want to see their old friends and meet some new ones.

If the weather is bad, we will meet in the basement of Phipps Auditorium.

LIGHTING AND HEATING FOR WINTER PLANTS

How many times we've all wondered just how much light and heat are necessary for growing plants during the winter months! And how many people have asked how one should go about lighting and heating a home greenhouse, or a basement plant room?

E. R. McEwan of the Public Service Company is going to answer these questions at Horticulture House, at 8 o'clock Friday evening, October 27. For those who want to know how to make house plants thrive, this talk will be most helpful. Horticulture House will open at 7:30.



Buckeye, Aesculus

CONSIDER THE FALL FRUITS FOR COLOR AND INTEREST

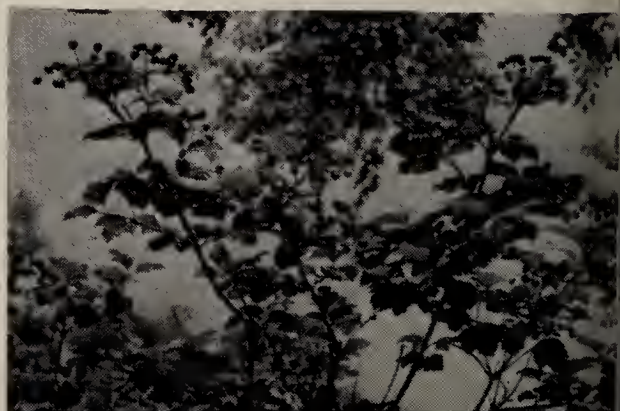
IN most gardens, more attention should be given to obtaining year 'round effects. Many times we consider only the flowering effect of a shrub or tree, while the effect of the fruit may be even more distinctive and much longer lasting. Bright colored fruits or fruits of attractive shape may add interest at those seasons of the year when there are few bright flowers. By carefully arranging a variety of plants there is interest almost all the year through. There may be effects of bloom, varicolored foliage, bark, fall color and fruit.

One of the most spectacular examples of the value of ornamental fruit is the Mountainash. While most often seen as a tree there is a fine native shrub that gives all the effect of the bright orange fruit and yet

stays within reasonable bounds. In comparison to the bloom of the Mountainash the fruit is many times as attractive.

Many of the Viburnums have fruit which is equal or greater in interest to the bloom. The Highbush Cranberry has longlasting red berries, the Nannyberry and Arrowwood have blue-black fruits and the Wayfaring

*American Cranberrybush,
Viburnum trilobum*



tree has fruits which change in color from green, through yellow and red to black. The other nice characteristics of this group of shrubs make them very desirable.

The Hawthorns have a great variety in the color, character and season of their fruits. Some like the Cockspur bear fruit that hangs on all winter but is rather dull colored; some like the Downy, have large bright red fruit but it only hangs on a few weeks in fall. The native haws have rather attractive red fruits which are quite persistent. Probably, the best haw of all is the Washington, which bears bright red fruit which hangs on most of the winter looking much like holly berries.

There are at least two quite hardy Cotoneasters which give good winter effects with their berries. The Peking has black berries and the European has bright red. There are a few other

species which are hardy under favorable conditions. Birds do not seem to eat these berries until late spring.

Perhaps the best known of the berried shrubs is the Japanese Barberry. These berries are so bright red and so persistent that everyone loves them. The common barberry has even more attractive fruit but that is outlawed on account of its being one of the hosts of wheat rust. Few seem to know the Korean barberry which has equally attractive red berries and is safe to grow. This medium height shrub is very hardy and equally attractive when in bloom and when in full fall color. Its chief fault is that it does sucker from the root.

Many have never thought of the Privets as berried shrubs because in most cases they are sheared for a hedge and so never produce fruit. Each species varies in character and color of fruit, but generally the ber-

Goldenrain tree, Koelreuteria paniculata





Wayfaring Tree, Viburnum lantana

ries are in tight clusters and very jet black. Strangely they are one of the few cultivated shrubs which have berries poisonous to animals but very nourishing for fowl.

Another well known group of berry-bearing shrubs is the Symphoricarpos including the Snowberries and Coralberries. These low shrubs are commonly used for foundation plantings on the north as they do not grow tall and will tolerate considerable shade. The variety Chenaulti has attractive habit of growth and the berries are white, spotted with red.

The roses are admittedly grown primarily for their flowers yet the fruit, or hips of many shrub types are very attractive. Conspicuous among these are the Sweetbriar and Prairie Roses.

When the season is favorable, the

Colorado Hawthorn, Crataegus coloradensis



several species of Euonymus produce very attractive fruits which hang on during the winter. These are often called "Bishop caps" and are usually pink with a protruding red berry. The Wahoo or *E. atropurpureus* is probably the most successful in Colorado, while the Winged fills an important place in a more dwarf shrub. The vine types, *E. radicans* and others often bear attractive fruits which remind one of Bittersweet berries.

Redosier Dogwood, Cornus stolonifera



Bunchberry Elder, Sambucus microbotrys

There are many kinds of Honeysuckle which are easily grown and bear great quantities of red or yellow berries. These are too bitter for human consumption but the birds seem to love them. The tall Tartarian varieties are the most common,

but for their other qualities the Blueleaf and Zabelle are becoming more popular. The Late honeysuckle holds its berries throughout most of the winter.

Most of the Crabapples do not hold their fruit long, but many are very attractive for a few weeks or months. The Dolgo Crab is one of the most attractive as well as hardy. Some of the most attractive kinds planted in the East do not thrive here.



Washington Hawthorn,
Crataegus phaenopyrum

The genus *Cornus* includes some nice shrubs which bear a variety of attractive and persistent berries. Most common is the Redosier with cream-colored berries, but equally valuable are the Gray dogwood with white berries and the Bailey's with blue.

The Buckthorn is a coarse growing tall shrub, but has attractive and persistent black berries. The Jetbead also produces persistent jet black berries where it has sufficient protection.

Not all attractive fruits are berries. For instance the Goldenraintree has very attractive triangular, brown



Common Bladder Senna,
Colutea arborescens

Pods and the rare Bladdernut has also interesting inflated brown pods. The Bladder senna bears inflated pods which become silvery and quite attractive in winter. The hoptree's fruits are like large silvery ammunition for capguns.

Several kinds of Sumac have attractive seed heads that persist most of the winter. The fruits of the Smoke tree and the native Mountain mahogany are fluffy and silvery but very attractive. Ninebark seedheads are dry but color up to make attractive ornaments.

One of our most versatile trees, the Russianolive, has silvery "olives" which hang on until the Waxwings

Western Chokecherry,
Prunus virginiana demissa



come through in spring. The native Alder and Birch shrubs are quite attractive with their small conelike catkins.

Among the vines the bittersweet leads when it takes a notion to produce fruit, the fluffy seedheads of Clematis are very attractive, and for a short season the fruits of Englemann Ivy and Hop vine are interesting.

Some of the trees make a good display of attractive fruits; most noticeable among them being the Honey-

locust, Catalpa, Kentucky Coffeetree and Buckeye.

Many of our most attractive and useful fruits are so relished by birds or humans that they are of short life, but they should be considered for even their short-lived value. They include Chokecherry, Pin cherry, Elderberry, Buffaloberry and Nanking Cherry.

Include some of these plants with attractive fruits and you will extend the time of interest in your garden by many weeks.



WHY WE USE SCIENTIFIC PLANT NAMES

L. J. HOLLAND

I HAVE often been asked, "Why is it necessary to use unpronounceable Latin or Greek names for plants, when common names are readily understood by everyone?" I usually reply that what we know as "common" names aren't common to all parts of the world, or even to all of our own country, while on the other hand the scientific names have universal acceptance. This, however, is a rather inadequate answer, and in this article I shall try to clarify the above statement so that the average home gardener can have at least a rudimentary knowledge of botanical nomenclature.

When one realizes that there are close to a half-million different plants in the world it is evident that some systematic method of classification must be established. The first real progress in this direction was made in the middle of the eighteenth century by Linnaeus, often called the Father of Botany. He devised a plan whereby plants were grouped according to floral structure, seed formation, etc., into Orders, Families, Genera and Species, and gave each plant a scientific name consisting of two

parts; the genus name and species name, and since these names should be of a stabilized language to avoid confusion, the classical languages of Greek and Latin were chosen.

When one is faced with the fact that throughout the civilized world the Pansy has more than three hundred names and the Foxglove has well over a hundred, the need for one name that will be recognized in all countries is at once apparent. To illustrate this, let us take the common Potato, in German it is "kartoffel"; in French, "Pomme de terre," while in Spanish it is "Papas blanca"; yet whether it be in Sweden or Australia the botanical name is *Solanum tuberosum*.

There is yet another confusing problem that must be considered; that of the same "common" name being applied to plants that are not of the same genera. For instance "Bachelor's Button" is used for *Centaurea cyanus* (Cornflower), *Gomphrena globosa* (Globe amaranth), and for the double form of Buttercup (*Ranunculus acris*). None of these plants are of the same family. Also "Dusty Miller" is a name that is

loosely applied to species of *Senecio*, *Centaurea*, *Artemisia* and *Lychnis*. All this does not mean that one should always refer to the Pansy as *Viola tricolor*, or that *Gaillardia* should not be called "Blanketflower"; on the contrary let us retain those familiar and colorful names, but at the same time learn to use and understand the significance of their botanical names.

Anyone who knows the botanical name of the Pansy is aware that it is closely related to the Birdfoot Violet and that the Sweet Pea (*Lathyrus odorata*) has a cousin among our native wildflowers. Also scientific names are a means of identifying plants as belonging to the same group that may appear quite different. Thus, there is little superficial resemblance between our Dwarf Cornel and the Flowering Dogwood of the South, yet their botanical names are respectively *Cornus canadensis* and *Cornus florida* which dispels any doubt of their ties. Probably the fact that a knowledge of botanical names insures a familiarity of the relationship of plants is one of the most favorable arguments possible to offer.

To get an idea of the practical application of botanical names, let us take the Columbine (*Aquilegia*). It is easy to see that our State flower and the Yellow Columbine resemble each other greatly, therefore we place both in the same genera, but since there is a marked difference in both flower and foliage they are placed in separate species; *coerulea* (Sky blue), and *chrysantha* (Gold flowered), respectively. As in the above instances, the species (specific) name is almost invariably descriptive of some characteristic peculiar to that particular plant. Quite often variations within a species makes additional classification desirable; thus, the double flowered variety of the Yellow Columbine

would be known as: *Aquilegia chrysantha* var. *flore plena*.

Gardeners with an inquiring mind are usually interested in the different genera that make up a plant family, but are somewhat perplexed by the seemingly wide differences that exist between members of the same family. The novice may wonder why the Aspen is placed in the Willow Family (*Salicaceae*), and only to the more advanced student of botany is the relationship of the Plains Cottonwood (*Populus sargentii*) and the Summit Willow (*Salix saximontana*) apparent. Yet if one compares the Narrowleaf Cottonwood (*P. angustifolia*) with the Peachleaf Willow (*S. amygdaloides*), the reason is more clearly understood, especially so, if one carefully studies other species of Poplar and Willow and notes that certain general characteristics are identifiable throughout the entire group. Further, only a cursory examination of the Snapdragon, the Pentstemon and the Indian Paintbrush reveals that they all belong to the same family, even though they are obviously of different genera.

To further aid the beginner, there are pronouncing dictionaries of plant names costing from a few cents up to several dollars, the cheaper ones being quite sufficient for the average gardener and small enough to be carried in the purse or pocket. Also there are several garden encyclopedias that broaden your knowledge of botanical terms immensely. Certainly no plant lover should be without these books, for the more you know about a favorite flower, the more you'll enjoy it.

Above all, don't be self-conscious about using botanical names. You will soon find the ease with which you acquire a working vocabulary of botanical terms quite gratifying.



SO MUCH FOR SO LITTLE

In comparison with the benefits a homeowner derives from a fine shade tree, the cost of maintaining it in first-class condition is negligible. Barring treatments for ailments or injuries caused by unusual circumstances, a tree needs sunshine and water, *fertilizer* periodically, *pruning* occasionally, *spraying* to control insects and diseases when such attacks occur, and little, if anything more. How much would it cost to care properly for a tree throughout its life? No exact figure can be given, of course, but

certainly the cost of such care, prorated over the years would not be more than just a few dollars annually.

For money spent to keep it healthy, just what does a shade tree give in return? Certainly, shade is of paramount importance during hot summer days. Tree-shaded streets and highways are noticeably cooler and more comfortable than those exposed to the direct rays of the sun. In landscaping a new home a tree usually is placed so that it will shade the house from the hot afternoon sun. Lawns

and public parks would be unattractive and little used if there were no trees present to provide shade. Trees muffle discordant noises, screen the dust from the air, act as windbreaks, take in carbon dioxide from the atmosphere and release oxygen. The presence of trees adds financial value to real estate; hence, in many modern subdivisions trees are planted as soon as the lots and streets are plotted and before any houses are built.

In addition to these very tangible benefits, healthy trees contribute to the well-being of man in many ways

that cannot be evaluated adequately. They have inspired the writing of some of our best-loved poems and songs; they have served as the inspiration and the subject of many beautiful paintings. Association with trees—walking under them, enjoying their beauty, caring for them—somehow seems to dispel vexations and disappointments, to ease strain and mental fatigue, to enable one to view life's problems in truer perspective.

Truly Trees Return Much for the Little That is Spent in Their Behalf.

*Excerpt from Shade Tree Digest.
Courtesy of Swingle Tree Surgery.*

THE CHIPS ARE DOWN IN BRUSH DISPOSAL

What to Do With the Brush?

OUR recent disastrous snowstorms—not so recent any more, but the results are still in evidence—have shown up a problem that is bothering a number of home owners in particular and the city in general. What to do with the brush?

Almost every home has a smaller or larger brushpile staring the owner in his face and bothering the city officials. Only small bundles, neatly tied, can be taken in the city cleanup. Burning it is a possibility only if there is a vacant lot close by, transporting it in a car is difficult to say the least, and I am afraid the traffic department would object to the trailing of a large bundle behind a car on the way to the nearest dump.

What to do? Here is a new idea the City of East Orange, New Jersey, is now using. It grinds its brush into chips!

The Chipper will take limbs up to six inches in diameter, according to the Forester of East Orange's Shade Tree Commission, and chew them up

into small chips, larger than sawdust, smaller than shavings.

It is done by a roller nine inches long and almost a foot in diameter, provided with three horizontal cutting blades. At 2200 revolutions a minutes it makes short shrift of the brush that is fed into the machine.

The rest is up to your imagination. Can you visualize a chipper Chipper going along the streets once a week, ringing a bell: "We'll get you out of the brush." "Take the chips off your shoulder." "Branch plant for future breakfast food," etc.

Think of Denver as the "Chip-Center" for the manufacture of nylon, plastic wood, wood-sugar, even newspaper print.

These may be visionary dreams but at least I am glad there may be hope for our children, so they won't have to worry about disposing of that brushpile in the alley.

In the meantime, does anyone know of an inexpensive truckman, who will haul off mine for seventy-five cents?

TEMPERATURE AS A GROWTH FACTOR

By ALEX N. KLOSE

Horticulturist for the Milwaukee Equipment Mfg. Co. Reprinted by Permission.

NO other season of the year makes gardeners more temperature conscious than Autumn. For it is during October, the Indian Summer month, that careful observers of Nature are thrilled at the sight of wedge-shaped flocks of ducks and geese winging their way toward winter quarters, above the ever-changing pageant of color which Mother Nature is displaying in the ornamental plants of the home grounds, the woods, and the roadside.

Because the change of leaf color which occurs in the fall of the year is the result of the activities of the various growth factors, thereby bringing it within the scope of these discussions, perhaps a thumb-nail sketch of the reactions responsible for this grand color display will result in a better appreciation of Nature.

First of all, the mythical Jack Frost does not paint the leaves of shrubs, trees, and other native plants with their resplendent autumn colors. Plants grown in a greenhouse, if natural conditions are duplicated, will color up just as beautifully as those growing outdoors. In fact, frost very often injures the leaves and ruins the chance of a colorful autumn.

Although not always realized or fully appreciated, the splendid hue of leaves is displayed to comparatively few people. This breath-taking review of color is evident only to those folks living in certain sections of the United States, and in a rather narrow zone which extends across Asia. While a change in appearance does occur in leaves growing in other parts of the world, the colors are limited more or less to muddy reds and dirty

yellows and seldom have the brilliancy of those formed in the north.

There are a number of factors responsible for the fall color array, among which is heredity. It is heredity which determines the color for each kind of tree. Red maples become a fire-engine red, sugar maples not quite as bright, and the other maples rarely produce a red pigment, and are therefore limited to a strawy yellow color.

Heredity also determines how short the days must become before a color change occurs. Here is where the growth factor light plays an important part; for, just as soon as sunlight drops to a definite intensity, autumn coloring starts. A close observer of Nature will note that this occurs on about the same date each year. Very often trees and shrubs planted in the home grounds do not color up like those found growing in their native habitat. If this is the case, check the growing location of the planting at night to determine whether a street light or a light from a building shines on it, thereby preventing the formation of a normal fall coloring.

Soil—its organic, moisture, and plant nutrient content, plays an important part in determining color and its intensity. For it is the soil which supplies the plant with the nutrients which are converted into sugars by the right light intensity on the leaf. It is only when there is an excess of sugar in the leaf that the reds and reddish browns are freely made.

Often the question arises as to why a change in leaf color does not occur in the spring of the year when the

light intensity is almost exactly the same as in the fall. A brief answer to such a query is that in the spring of the year the leaves are in such an active state of growth they do not have time to make an excess of sugar.

Another growth factor, temperature, also performs an important task in Nature's color factory. For it is only during sunny days and cool nights, when the temperature is near the freezing point, that the stored starch is changed into sugar and the rate at which sugar is used by the plant is lowered. The growth factor light works hand-in-hand with temperature in bringing about the color changes which are brightest in those leaves exposed to the direct sunlight.

The growth factor moisture can very often spoil the fall showing of color. If the month of September is exceptionally wet, the leaf colors are not very attractive because the excessive amount of moisture in the soil encourages a continuance of growth in the trees. While in this active growth, the plant keeps using the sugar for its normal biological functions instead of accumulating it. In addition to contributing to the grand fall color panorama, temperature has a decided influence on all of the plant growth processes. As a result, temperature often is the deciding factor as to the kinds of plants which can be grown in a certain locality.

The chemical reactions which take place in a plant and the rate at which moisture is transpired from its leaves is directly related to the temperature in which it is growing. It is generally known that liquids, when heated, increase their ability to dissolve various substances. Although the movement of the liquids carrying the nutrients in a plant is dependent upon more than just a simple chemical re-

action, temperature does contribute to the final result.

The effect of temperature and its relation to the movement of liquids within the plant is very evident when plants are grown in an environment where wide fluctuations between soil and atmospheric temperatures occur. Some turf experts suggest that lawn grasses be watered when the temperature of the soil, the atmosphere, and the water being applied is as nearly alike as possible.

The importance of avoiding a wide variation in the related temperatures becomes more evident when the close relationship existing between the rate of absorption by the roots, the reaction in the leaf (consisting of the exchange of carbon and oxygen from the air), the rate at which moisture is lost, and the formation of the green coloring matter (chlorophyll) in the leaf is considered.

The effects of temperature on plant growth work within certain limits—often very wide limits, is related to the chemical reactions. It has been established by plant scientists that for every eighteen degree increase in temperature, there is a corresponding increase of chemical reactions of two or three times. This might infer that a rise of atmospheric temperature will stimulate the plant into a more rapid movement of the soil water and the nutrients which it contains. When gardeners attempt to "force" a plant into a more active growth, such a procedure usually consists of increasing the temperature. If such a program, which disregards the close relationship which exists between temperature and the other growth factors is followed, the final results are seldom satisfactory.

In reality, and this applies to plants being grown indoors, the expression "to force" plant growth is a misnomer.

For actually, a plant cannot be forced into growth without providing all of its requirements. Gardeners often complain that they have no luck growing plants indoors. The successful growth of a plant is not dependent upon luck or chance. When the proper conditions are provided for its normal development, a plant will grow satisfactorily. In the case of house plants most disappointments result from high temperatures. These high temperatures, coupled with insufficient amounts of the growth factor light, throw out of balance the sensitive relationship which must exist for the natural growth of a plant.

Unlike members of the animal kingdom, which have a rather delicately balanced and steady body temperature, the temperature of plants follows or adjusts itself rather closely to that of the environment in which it is growing. This temperature can, however, fall below that of its immediate environment because of excessive evaporation—or, it may rise because of heat released during its normal breathing process.

There are rather definite or well marked differences in the relationship which exists in plant growth and temperature. This well-defined temperature range is related to the original habitat of the plant. Therefore, the highest temperature at which alpine plants can be grown is obviously far lower than that which is required for a plant whose original home was the tropics. Likewise, plants which are grown indoors also have a rather narrow temperature range in which to make their normal growth. Plants whose entire growth structure is designed for a normal development under tropical conditions cannot be expected to grow under those found in the desert.

A gardener who fails to provide an

environment for a plant which is similar to its original habitat is doomed to failure. The effects of wide and sudden ranges of temperature are quite pronounced in the growing of house plants. Many gardeners practice a temperature control program, probably unknowingly, when house plants are watered. Some growers of the increasingly popular house plant, Saintpaulia, or African violet, are extremely cautious when watering to keep the foliage dry. Perhaps a consideration of the Saintpaulia's original home will shed some light on the problem of watering, which is actually a problem of temperature.

The history of the discovery of this perky little golden-eyed beauty is a long, interesting story in itself. The African violet, which is not a violet nor a member of the viola family, receives its name from the only country in the world in which it is found—namely, Africa. It is not, however, a violet, because, violets being cool-loving plants, could not survive under the tropical conditions which exist in the Saintpaulia's homeland.

The Saintpaulia has been found growing in various parts of Africa in the Usambara Mountain area and that section extending to the Coast. This district which contains one of the few gorilla sanctuaries in the world, probably has as great a variety of bird, animal, and plant life as is found anywhere on the universe. Being a semi-tropical country it also has a rainy season which naturally drenches these fuzzy-leafed little plants growing in the organically-filled limestone ridges of the locality. To show further their disregard for overhead watering, plant explorers have found the parents of Blue Boy, Sailor Boy, and all of the other variety members of Saintpaulia family

growing near the base of some of the highest waterfalls in the world, whose mists fill the air in which the plant is growing.

All of this should suggest that the leaves of the Saintpaulia are not sensitive to water. The important relationship which exists between water and temperature in the plant's native environment should not be overlooked. In spite of tropical rains, the leaf spot trouble of the Saintpaulia is almost an unheard of thing in Africa because the water which strikes the leaf is almost the same temperature as the leaf itself.

The leaf spot troubles of many plants are due largely then, not to the water as such, but rather to the difference of the water temperature and the leaf which it strikes. The surface leaf temperature of a plant is usually higher than that of the surrounding atmosphere. When this leaf temperature is subject to a rapid change, there is usually, as in the case of the Saintpaulia, a collapse of leaf cells. This results in leaf spot troubles. It should be remembered that it is change in temperature—not the water—which brings about this collapse. In fact, the same leaf disfiguration can occur if a cold object, such as a piece of metal, or a draft from a nearby window comes in contact with the leaf. Again using the Saintpaulia to illustrate, it has been found that an increase or decrease in temperature of fifteen degrees between that of the atmosphere and the leaf resulted in a leaf discoloration or spot.

In addition to atmospheric temperature, soil temperature also affects the final growth of a plant. Plant and soil investigations show that plant nutrients are absorbed more rapidly within certain temperature ranges or limits. Although the desired rela-

tionship between soil temperature and the absorption of nutrients for maximum growth has not been completely understood, results to date suggest that the proportions of potassium absorbed from a complex nutrient solution is greatest at low temperatures.

Soil temperatures contribute to the activity of the bacteria which it contains. Though some bacteria remain active at temperatures near the freezing point, the greatest build-up occurs in an average of about seventy degrees to one hundred ten degrees Fahrenheit. This micro-organism activity as related to temperature should be considered when using organic fertilizers. If rates and time application of these materials are disregarded, large amounts of these soluble substances might be released by bacterial activity at an undesirable stage of plant growth.

The rate at which the chlorophyll of the leaf is formed is also affected by temperature. It has been found that the marvelous photosynthesis processes occur at arctic temperatures close to zero and in those of the high temperatures found in the tropics. As a rule the rate of photosynthesis increases with that of temperature, within certain limits, as long as the required balance between temperature, light, air, moisture, and soil nutrient is maintained. Until a more complete understanding of all of the growth factors and their relationship to each other is available, it is not possible to substitute any one factor for another successfully.

Do you find help for your garden problems in the pages of the Green Thumb? If so tell your neighbors about it. If you have suggestions for stories or additional information in the Green Thumb, tell us.





GATES

Gates are to the garden what a cover is to a book. They give that first impression which influences greatly the opinion of the whole garden. Originally gates were to keep out wandering stock or uninvited guests, so were designed primarily for utility. Still they should have an appearance of utility if they are to be effective, but they may be so ornamented that they add much in themselves to the beauty of the garden.

From the selfish walled gardens of England years ago there was a swing in the opposite direction where there was no enclosure or privacy. Now we are again coming to realize that the pleasure received from a garden is often in direct relation to the enclosure and privacy secured. This demands gates to lead into the property or from one division to another. Here is where good taste and art may be employed to design gates which are both useful and ornamental.

Materials used for gates may vary greatly. There should be some connection in the design and material of a gate to the other features of the garden so that it appears to fit in the general plan. Where a gate is placed

there should always be an apparent need for a gate. A gate set where no gate is needed may be very poor design, even though it is beautiful in itself. A rustic gate in a formal garden may be as out of place as a formal iron gate in a pasture fence. Wood in many forms and finishes can be used to make attractive gates, well designed iron gates have always been in demand and now there are many new materials which lend themselves to ornamentation through shape, texture and color.



Two gates on this page from Horticulture House. Formal iron in front and friendly wooden in rear. On preceding pages is shown an attractive gate separating divisions of garden on grounds of Dr. George D. Ellis, 1670 Poplar, Denver.



FUN WITH SEEDS, WEEDS, STICKS, AND STONES

Friday, October 13, will bring an evening of fun to Green Thumbers. Mrs. C. Earl Davis and Mrs. G. P. Hance will share the honors of the evening, as they show their respective methods of having fun with dried materials for winter decorations and arrangements. These two champion arrangers will bring new ideas for using odd and unusual bits of this and that to fill the spots left empty as the summer flowers bid us goodbye. At 8 o'clock sharp.

PRESERVATION OF "LIVING MUSEUMS" SOUGHT THROUGH NATURE CON- SERVANCY BILL

SEEKING to save some of the remaining natural areas as "living museums" of primeval America for the benefit of future generations and for scientific study, Congressman Charles E. Bennett of Florida has just introduced a bill to establish a Nature Conservancy of the United States.

The Nature Conservancy is to be a voluntarily supported nonprofit organization with membership open to the public. The bill does not provide for any appropriations from the federal government.

The Nature Conservancy is designed to supplement the efforts of the National Park Service and to be an extension of the nature preservation side of the state park programs. The principal job will be to aid in the preservation of small natural areas and to help retain some of the natural features of the landscape for public enjoyment. Local areas of special scientific, educational, and esthetic value will be given most attention.

Typical examples of many kinds of natural features will be sought out and preserved. This will usually be done cooperatively with county or state governmental agencies or with local conservation organizations, the schools, or museums. The organization also will give technical advice to landowners interested in nature preservation.

Scientists say that many of our natural features already are becoming rare and that we must save samples of them in the immediate future if we are not to lose them entirely in the onrush of civilization. The va-

rious kinds of prairie and grassland are reported to be among the least well represented by preserves, but there is equal need for saving examples of many of the desert, forest, and marsh types. Examples of geological formations such as caves and unusual rock outcrops also will be preserved under the program.

According to the Ecologists Union, these samples of wild nature are extremely valuable for scientific research. Biologists and land managers use them as experimental check areas. Other scientists need them as sources for many kinds of plants and animals that are extinct everywhere else. The areas will provide a last refuge for these species, many of which are not yet well known to science. The tracts will serve an important educational role in carrying a heritage of the past down through the years so that future generations may know what the land is really like. Children will use them as places in which to gain a first-hand knowledge of the living world.

The work of saving these natural features is already being done by a number of local societies scattered about the country. The Nature Conservancy will be a stable organization which can aid these groups in financial, legal, and technical matters. It will thus create a coordinated national program.

The Nature Conservancy will be under the direction of a board of trustees that will include elected members and representatives of the Smithsonian Institution, the National Academy of Sciences, and three federal departments.



Beautiful specimens of Colchicum in garden of Dr. George D. Ellis.

PLANT MIRACLE DRUG: COLCHICINE

By M. WALTER PESMAN

NEW varieties of plants are introduced every year, some good, some indifferent, some worthless. Through the use of a "miracle drug" the process will be speeded up. Colchicine, the wonder worker, causes irregularities in plant cells, which can be used in producing new possibilities in plant breeding.

What is colchicine anyway? It comes from the autumn crocus, *Colchicum autumnale*, itself a freak in producing its lavender blossoms in fall. Long after its spring leaves have disappeared; suddenly these crocus-like blossoms appear "from nowhere," surprising the gardener who has forgotten about their existence.

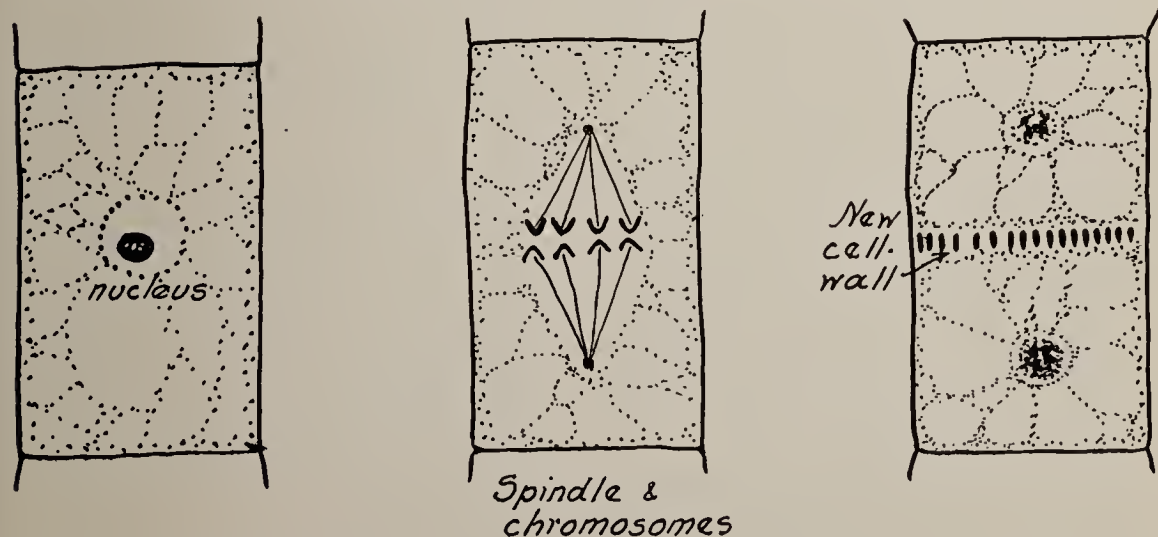
Colchicine is highly poisonous—a yellowish white powder soluble in water, an "alkaloid" like morphine. Derived from the seeds and corms of Fall Crocus, it used to be known as a remedy for gout; now it may lead to the development of vegetables and flowers with new tastes, odors or size. Its effect is on cell division.

Cells, as is well known, are the box-like microscopic units that make

up a plant; they multiply again and again, and thus a plant grows larger. Each cell has a cellwall and a gelatine-like contents, of which the *nucleus* is generally well defined as a thickened knobby part. It is the important part of the cell; we now know that it contains a definite number of so-called chromosomes, which in turn contain the "genes" or inheritance carriers. By their genes you shall know a plant (or animal).

When a cell is ready to divide itself, things begin to happen to its chromosomes. After some preliminaries they arrange themselves in a central plate, called *equatorial plate*, and a so-called *nuclear spindle* is formed on either side, consisting of threads or fibers reaching from the plate to two opposite poles (see drawing).

That is only the beginning. Now each chromosome divides in two equal parts, one half for each side; the spindle fibers pull each half to opposite poles, where a new nucleus is made up of them. Then, at last, a new cell wall is formed in the loca-



STAGES IN CELL-DIVISION

tion of the equatorial plate—and then there are two cells where there was only one before, each with the required number of chromosomes.

Now let's see what colchicine does to this, when applied to a cell ready to divide. It prevents the formation of these fibers and of a new cellwall. But the chromosomes are not stopped in their division.

The result? A new type of cell with twice the number of chromosomes, a sort of unnatural monstrosity, remembering that these chromosomes are responsible for the plant's inheritance, the gene-carriers.

When this process is continued the whole plant takes on a different character; leaves thicken, hairiness increases, the green color is intensified, flowers become of gigantic size—all because the cells are one and a half times larger and their chromosomes are doubled—yes, sometimes, quadrupled or more.

It reminds us of the time when Thomas Fairchild, the London nur-

seryman, produced artificial hybrids in pinks in 1719, "blushing for his work, believing it to be unnatural and immoral." (Wright's Story of Gardening). To think that a half percent solution of colchicine (or less), applied to seeds or young shoots, can have such far-reaching effects!

Some plants after treatment grow with increased vigor even though chromosomes have not multiplied.

Results so far are slow, even though some new varieties of rye, for instance, have been produced through the help of colchicine. Even at best, plant breeding is not a hurry-up process: results are achieved only by laborious and patient scientific experimentation. But at least a new departure is at hand.

A final word of warning: colchicine, being highly poisonous, is not a thing for the amateur to play with. It should only be used by well qualified serious persons with a scientific make-up if not with a science-trained background.

CRUCIAL YEAR FOR BEETLE CONTROL

By DON BLOCH

U. S. Forest Service

IF any control work is to be done, this year is the time to start."

Subject—the war against the Englemann spruce bark beetle epidemic on 350,000 acres of Colorado National Forests; date—1950. And the statement is the concluding one in the consensus report of Bureau of Entomology and Plant Quarantine and Forest Service officials who have been keeping close tab on this forest insect invasion for a decade.

"Our best judgment of the problem," they concluded early this year, "is that unless controlled in 1950, there will be little chance of stopping the outbreak before it consumes most

of the Englemann spruce and many millions of board feet of lodgepole pine in Colorado and southern Wyoming."

To date the best estimates of the Forest Service indicate a loss of four billion board feet of timber. This includes about 400 million board feet of lodgepole pine (mixed in with the Englemann spruce stands to which the beetle has turned as it eliminated the preferred host.) Prior to 1950, some 3.9 billion board feet of lumber in Englemann spruce trees had been destroyed. At an arbitrary present price of \$2 per thousand, this had a stumpage value of about \$7,800,000. Im-



Insect-killed Engelmann spruce near Cottonwood Camp, Arapahoe National Forest.

mediately threatened are trees containing an additional $5\frac{1}{2}$ billion board feet of lumber valued at about \$11 million. And, if the beetle is not eventually brought under control, trees containing 16,340,000,000 board feet may be killed, with a total loss of \$32,680,000.

Originally, most of the damage was done on the Grand Mesa and White River National Forests in Colorado. In the past year, however, in a mass migration for food, the beetles flew 25-30 miles over the sagebrush and pinon-juniper covered, non-forested farm land in the Colorado river valley to new stands of Engelmann spruce. On this flight, losses of beetles were heavy; and the new attacks are considered by the cooperating entomological bureau officials to be at their lowest numbers in years.

The northern division of the White River is no longer a center of infestation; the beetles have eliminated their host trees there. The infestation is now in a roughly bounded 45,000-acre area, spread along a 75-mile front extending from Rabbit Ears Pass, up near the northern border of the state to the Mt. Sopris area, about 30

miles south and east of Glenwood Springs.

The 1950 control program is concentrated on the east side of the known infested areas, particularly in the salients of apparent heaviest attack. Since June 29 this year, when Congress made available to the Forest Service a \$2 million appropriation for the insect control program, 11 treating camps have been established, clustered around headquarters in Eagle and Kremmling, Colorado, and 838 out of a final working total of 1,000 men are actively engaged in fighting the beetles.

It has been necessary to construct new roads into most all of the areas being treated. Actually, some 65 miles of these roads have been constructed, under contract; and, in addition to main haul roads, about 100 miles of jeep roads, lining out the areas into blocks for distribution of men and insecticides within the treating areas, are being broken through in the most rugged terrain. Pack-horses take up where jeeps leave off, to the interior of these blocks.

Platoons of trained entomologists form the vanguard into the infested

areas: they inspect every tree, marking those that have been attacked and should be treated. Treating crews, with hand pumps, follow the entomologists spraying every marked tree. Best-known proved treatments at the moment is by the "standing tree" method, in which the infested trees are thoroughly sprayed — literally washed — from 30-35 feet above ground level, on down to the base, with orthodichlorobenzene, a 1 to 6 admixture of the basic chemical and a No. 2 fuel (or diesel) oil. Infestations 35 feet above ground are left for the woodpeckers (black and white downy and hairy varieties, which stay all winter) and are natural enemies.

The 1948 brood of beetles, which have a life cycle of two years in the attacked trees, and which up to recently had been hibernating under the tree bark, emerged beginning about the third week in June. The pests then continued their flight until August 1, with the peak being reached sometime between July 10-15. With the insects attacked during the first half of July, millions were killed while still in their galleries, and the anticipated spread materially reduced. Had the 1948 brood escaped this summer, only the 1949 brood (still under the bark) could be killed, and the 1948 brood would wing its way to enter other trees miles away from the

*Cottonwood Camp, Arapahoe
National Forest.*



*Building access road on White River
National Forest.*

present infestation.

Action was therefore necessary, and the work is now in full progress. Treating is concentrated on trees attacked in 1949, in order to limit new infestation in 1951 to a minimum. The beetle would otherwise emerge from these trees in June or early July next year, the entomologists and Forest Service officials agree, "and the ratio of infestation from these 1949 infested trees to new attacks next year would be about two or three to one. Beetles will not emerge from trees attacked in 1950 until June and July 1952, and it will be necessary to clean most of them up in the campaign next spring and summer."

As of the moment, Sept. 9th, the accomplishment record indicates the project is 92 per cent completed toward an objective of 500,000 trees to be treated: in some 25,091 man-days of work, over 694,303 gallons of insecticide have been sprayed in a deadly drench on 459,742 insect-attacked Englemann spruce trees.

GREENE'S MOUNTAIN ASH

This is a fine native shrub that should be used more in cultivation. It is more frequently found on the Western Slope, though occasional specimens or groups may be seen almost anywhere at elevations of from seven to nine thousand feet elevation. They are generally growing in partial shade and where there is ample moisture in the soil. Where they are compelled to compete with trees for light they may grow up to ten or fifteen feet tall and become rather leggy, but where they are in the open they form a compact bush four to six feet tall and about that broad. They are of very neat appearance with their sumac-like compound leaves. The large flat heads of tiny white flowers are very ornamental when they are blooming in spring, but the odor is slightly disagreeable.

The real show comes in the fall when the orange fruits like those on the familiar trees cover the plant. Under cultivation this shrub grows very slowly, which is a decided advantage to the owner but discouraging to the nurseryman who hopes to sell them at a profit. They have a large but

Attractive Mountainash berries in fall.



*Native Mountainash in bloom
near Slovonia.*

rather shallow root system which makes them rather difficult to transplant. They are propagated by seeds. Your nurseryman probably does not handle this valuable shrub but will do so if enough people ask him for it.

REQUESTS CONTINUE TO COME IN FOR PLANT DEFINITIONS

A few follow:

Anther—the pollen-bearing part of a flower stamen. Distinctly manifest in the case of lilies.

Cyme—a broad, more or less flattened flower cluster.

Glaucous—covered with a "bloom" or whitish substance that can be rubbed off.

Herbaceous — dying down each year. Not evergreen.

Hip—the fruit of a rose.

Node—a joint on the stem where a leaf is produced.

Procumbent — lying flat, trailing but does not root.

Succulent—thick and soft in texture; fleshy, as sedum, sempervivum, etc.

Whorl — three or more leaves around a plant stem in a circle at one joint.—H. F.



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To Mr. and Mrs. Carl B. Newlon, we wish to acknowledge receipt of the following books, bequeathed to the Horticultural Library by the late Mrs. Jesse H. Newlon:

The Standard Cyclopedia of Horticulture—3 Vols. L. H. Bailey
 Wild Flowers—Homer D. House
 Botanist & Florist—Alphonso Wood
 Pennsylvania Trees—Joseph F. Illick
 The Gardener's Red Book—Richardson Wright
 Honey Plants of North America—John H. Lovell
 Old Roses—Mrs. F. L. Keays
 The Alpine Flora—Henry Correvon and Philippe Robert
 The Botanical Magazine — William Curtis—London, very old
 The Tree Book—Julia E. Rogers
 Manual of the Flora of the Northern States and Canada—Britton
 The Little Kitchen Garden—Giles
 Design in The Little Garden—Fletcher Steele
 Children and Gardens—Gertrude Jekyll
 Roses and How to Grow Them—J. Horace McFarland
 Down the Garden Path—Beverly Nichols
 The Little Garden—Mrs. Francis King

BOOK REVIEW

"*Wild Flowers at a Glance*", by M. C. Carey and Dorothy Fitchew, Published by Pellegrini and Cudahy, N. Y., 1950, \$2.75.

"*Wild Flowers at a Glance*", printed in Great Britain but published in this country, should be valuable to the lover of wild flowers for the illustrations alone. Each flower described is pictured in color and its common, scientific and family name given. In addition, the derivation of the genus and species name is explained—a nice feature.

The authors have attempted to show where each plant is native and have given both the range in Great Britain and in America. Here, as might be expected, a few inaccuracies or omissions are noted. In fact, the authors seem to be more familiar with the wild flowers of the eastern United States. This reviewer, however, was pleased to see many plants illustrated which have been omitted from other books. Among these might be mentioned "Sea holly", "Coltsfoot", some of the small cuphorbias and plantains, etc.

Some of the common names given, while unfamiliar to the average American, have a charm all their own. For instance, "Codlious-and-cream", "Rest-harrow", "Lady's smock", "Lords and Ladies", etc. But to show that common names can be deceiving, witness "Cowslip", to us a member of the Buttercup family but used here, as in England, to refer to a primrose.

Altogether, "*Wild Flowers at a Glance*", is a book to enjoy, to find some of our common emigrants described and pictured and to make us here in the Rocky Mountains a little more conscious of our lack of a comprehensive wild flower book of our own!

KATHRYN KALMBACH.

Flora's Interpreter. Improved 14th edition by Mrs. Sara J. Hale. 1848.

A selection of sentiments from our best poets. It is unlike any book of poetry ever published. There is a page of botanical explanations, also one on the manner of flowering, another on classes and orders and a half page on how to tell poisonous plants. With a dedication to the Youth of America, the introduction ends, "May it inspire our young ladies to cultivate those virtues which can be represented by the fairest flowers; and our young men to cultivate their minds till our land shall become beautified by the spirit of Taste and our literature brilliant by the creation of Genius."

The Gardener's Year, by Karel Capek.

How to make a perfect lawn is well worth the entire book. An American millionaire said to a Country Gentleman, "I will pay you anything you like if you reveal to me by what method such a perfect, even, level, fresh, everlasting, in short an English lawn such as yours is made". "That is very simple," said the Squire, "it must be well and deeply dug, it must be fertilized and porous, not sour, nor sticky, not heavy nor thin; then it must be well levelled so that it is like a table; after that you sow the seed and roll the ground well; then you water it daily and when the grass has grown you mow it week after week; you collect the cut grass with sweepers and roll the law. You must water, sprinkle, wet and spray it daily: and if you do this for three hundred years you will have a lawn as good as mine."



Heavy frost can be expected at any time now, so bring in the house plants that have been spending the summer out under the shrubs. Trim them or repot them as necessary, and check them for damaging insects.

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SCHOOL DAYS ARE HERE AGAIN

What are your plant problems? Would you like to learn some of the answers, and better still, learn how to figure out the answers to your problems that arise from troubles with climate, soil, and selection of species.

This fall, from October 11 and every Wednesday night until December 6, the University of Denver with the cooperation of CFHA, will offer a course in "Practical Ecology," which will begin with elementary botany and go through detailed considerations of how to make the environment suit the plants or select the species of plants to fit the conditions. No previous school work in plant science is necessary, as the course will include a detailed study of how plants are put together and what makes them "tick" in the University laboratories. The only requirement is a sincere interest in plants and plant problems.

Registration will be extremely simple. Those interested in taking the course should come to Horticulture House at 7:30 p. m. on October 11, sign their name to signify that they wish to take the course and pay the fee of \$12. Each meeting will be two hours long. The size of the class will be limited so come early if you want to be a member.

—DR. MORAS SHUBERT.

HOME LANDSCAPING

can be learned the easy (?) way by attending Mr. Pesman's class on Fri-

day evenings, 8-9:30 at 208 Barnes Bldg.

It is given by Colorado University Extension to fill the need of so many home owners and people in landscape work. Bring in your personal problems for help and discussion. Study plant material as it grows. Meet congenial garden lovers.

Does that sound like sales talk? Well, last fall's class did not think so: they had a good time and were able to learn a lot about how to solve their own garden problems.

Don't attend if you know all the answers anyway,—because the rest of us don't. . . . But we are trying to learn.

Question—How deep should seeds be covered with soil? A new Gardener.

Answer—From two to three times their own smallest diameter. If sown early or in clay soil, cover somewhat less than normal depths. H.F.

Question: After Peonies bloom should the foliage be cut down immediately? —J. L., Wheatridge.

Answer: Remember that any plant's substance is built up by the action of its foliage. That's what the leaves are for. Therefore do not cut the foliage any more than is necessary—it should be left on until the last fall clearance in the garden. No harm in leaving the tops all winter, but at all events leave as long as possible. The foliage will fall outward and make an automatic mulch just where the mulch is needed—around and not on top of the crown.



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Questions and Answers

Question: I am planning now, to later mound the soil around the base of my rose plants. How shall I do this? Dr. B., Boulder.

Answer: It is not the best way to hoe soil from between the plants. This is likely to expose the roots. It is necessary to bring in additional soil from outside or from some other part of the garden. This soil must be taken off again in the spring, when frost is out of the ground. Make the soil mounds 6, 8 and 10 inches high.

Question: I have a privet hedge coming on around my new home. I do not know what form I should follow in the trimming. Mrs. L. K., Lakewood.

Answer: If the hedge be appreciably wider at the top than at the bottom, it holds the snow in winter and this is apt to break the bushes apart. It also prevents moisture from reaching the roots and the sunlight from reaching the lower part of the plants. For these reasons a hedge trimmed straight up and down or with a wider base than top is better than one of a wedge shape.

Question—What may I use to associate in a planting with Delphiniums? Mrs. W. R. Denver.

Answer—The Delphinium has two long-honored companions, the Madonna Lily and Liliun croceum. You may like also the charming foil of the meadow rue, Thalictrum glaucum with its lovely gray leaves and puffs of pale yellow bloom. Sometime try Thermopsis and Campanula latifolia macrantha, rich purple or pure white. This latter blossoms first but often stays to make an interesting association.

H. F.

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FOR CHILDREN OF 8 TO 80

CATTAILS

If one were compelled to live off the country in Colorado, I know of but one plant that would provide them with nourishing food for any great length of time. That is the cattail which commonly grows in swamps. It was one of the principal vegetable foods of the Indians which the white people have not as yet learned to use commercially.

The new shoots from the old plants are about the size of a man's finger and sharp pointed. These are formed

in the summer ready to grow into the new stalks in the next year. They are stored full of starch like a potato and are crisp and juicy. The older stems at this time contain a little starch but are tough and ropery.

It is a wet and muddy job to dig these roots but enough to provide food for several days can be dug in a few hours. Those who would try these out should be cautioned that many modern-day swamps are filled with sewage and it is not safe to eat the roots that are grown there unless they are thoroughly cooked.

The cattails furnished other valuable products for the Indians. The down from the ripened heads was gathered to use as a soft packing for the Indian babies in the cradle-board. The leaves were used to tie things together as we use rope. Modern gardeners use mats made from these cattail stalks as insulation for their hot beds. The construction of the leaves is such that there are many air pockets



which provide insulation from cold or heat in an efficient way not equalled by synthetic products.

Your granddad will remember the cattail only as a handy torch when soaked overnight in kerosene, but someday it is possible that some of these uses that the Indians made of them will come back into style again. Swampy ground that is unsuitable for other use might produce much food.

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There will be sections for commercial men where all the new techniques are explained and simultaneous meetings for the dirt gardeners who will want to know "how to do it." The annual dinner of the Association will be held the first evening. This is the big yearly get-together for all those interested in trees and flowers.

Tell all your friends in the Rocky Mountain area about it.

What Does YOUR Membership in

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It means your support of a worthy cause, for the Association is working for: the preservation of the natural beauty of Colorado; by

the protection of her trees, wildflowers, other plants and wild life;

the proper maintenance and additional planting of gardens, flowers, shrubs, and trees in all communities;

the establishment of a State Botanical Garden or an Arboretum; roadside parks, state parks and botanical reserves throughout the State;

the publication of a magazine devoted to correct information regarding forestry and horticulture practices; plants best suited to the climate; coordination of the knowledge of foresters, horticulturists and gardeners for their mutual benefit; a connecting medium between the association and the member.

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Name

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OCTOBER GARDENING

LAST spring, how you envied your neighbor's fine display of tulips, narcissus, hyacinths, and other early blooming bulbous plants. You should learn that these things must be planned for in advance and the bulbs planted in the fall. As early as you can get the bulbs from your seedman is time to plant them. Don't wait too long or you will not be able to get a full assortment of colors and snow may catch you before the bulbs can be set in the ground. In this Rocky Mountain country it is well to plant them a little deeper than the usual directions—tulips at around 10 inches. If they do not have the full sun, such as on the south of a building, they usually grow larger and last longer. Tulips planted deeply will not "run out" or divide so quickly, and it is less dangerous to plant shallow-rooted annuals over them.

Peonies, bleeding hearts and many perennials that have stopped blooming may also be moved in the fall. Prepare the ground thoroughly as they like to be left alone for many years.

This is clean-up time. Remove the old, dead stems of perennials and annuals, trim the scraggly hedges and edge the lawn around the shrub groups. If gardens are laid out with proper lines and contain a sufficient proportion of the appropriate inanimate features they may be beautiful all the year around, even when no bloom or even green leaves are visible. Neatness is most important when there are no brilliant flowers to catch the eye. It is not good taste or necessary to expect the garden to be as immaculate as the living room rug. A few leaves blowing around look natural and will help protect the roots of perennials and shrubs. Save all the

leaves and smaller stems possible to add to the very important compost heap. Burning leaves may be typical of fall but it is a wasteful and unnecessary practice. This composted material is very important for spading into the soil or as a mulch over the top. It is Nature's way.

Lawns may be successfully planted any time from the middle of August to the middle of October, in most years. Old lawns may be patched up also at this time. The days are warm enough to allow the grass to grow, but the nights are cool, making it less difficult to keep the soil moist and weeds are much less of a problem. Prepare the soil thoroughly before seeding and get the best possible seed.

Another fall job often neglected is the spraying of Dogwood, Snowball and Euonymus just before they drop their leaves. The aphids which do so much damage in the spring are at this time on the surface and easily killed, if you will remember to go after them.

Use the same good judgment in watering now that you have used all summer. A sudden change from watering every other day to no water at all is not good for plants. They should not be stimulated into rank growth by watering late in fall, but after they are dormant they should be checked at least once a month (all winter) to be sure that they have moist soil around their roots. A large percentage of our "winterkill" in the Rocky Mountain area is caused by our hot winter sun drawing moisture from plants which have not sufficient water in the soil to replace the loss. Of course, it is useless to pour water on soil which is already frozen. The time to water **THOROUGHLY** is before the ground is frozen.

SOMEONE YOU KNOW

- is trying to start a garden here,
- wants good garden books to read,
- is interested in getting an arboretum started,
- is interested in preserving the natural beauty of Colorado,
- wants to know what other "green thumbers" are doing.

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To preserve the natural beauty of Colorado; to protect the forests; to encourage proper maintenance and additional planting of trees, shrubs, and gardens; to make available correct information regarding forestry, horticultural practices and plants best suited to the climate; and to coordinate the knowledge of foresters, horticulturists and gardeners for their mutual benefit.

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The Green Thumb

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NOVEMBER, 1950

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Colorado Forestry and Horticulture Association

Organized in 1884

"To preserve the natural beauty of Colorado; to protect the forests; to encourage proper maintenance and additional planting of trees, shrubs and gardens; to make available correct information regarding forestry, horticultural practices and plants best suited to the climate; and to coordinate the knowledge and experience of foresters, horticulturists and gardeners for their mutual benefit."

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NOVEMBER SCHEDULE

Nov. 10, Fri. "New Botanical Literature, by Wm. E. Weber from Colorado University; also recent kodachromes of unusual flowers. 8 P.M. at Horticulture House. Arranged by Botany Seminar.

Who doesn't like to see pictures of our lovely Colorado country and when they are moving and in color that makes them all the better.

On Friday evening, November 17, Mr. Kemper G. Marshall will bring to Horticulture House his own movies taken here and there in the state. Some of them will show a number of our wilder corners including the "Flattops" country. Others will give us glimpses of gardens and flowers right here in Denver. So come out to Horticulture House at 7:30 to visit, or at 8:00 sharp for this program of pleasant pictures.

There are no definitely scheduled outdoor trips for November. If you have a good trip in mind that you would like to take you should call Horticulture House, TA 3410, or Mrs. Timm, PE 5565.

DEAR GREEN THUMBERS:

Did you know that your subscription to the Green Thumb also makes you members of the Colorado Forestry and Horticulture Association

"with all the rights and privileges thereunto pertaining"? One of these is the program of open meetings which have been held at Horticulture House on Friday evenings. Now, your program committee would like to find out just what you members would like to see, hear or do at those meetings. We would really appreciate it if you would drop us a card at Horticulture House answering the following questions:

- 1) Do you attend the Friday evening meetings?
- 2) Do you think another night would be better than Friday?
- 3) Would you prefer another time to evenings?
- 4) Do you check the calendar of events in the Green Thumb each month and mark dates that interest you on your own calendar?
- 5) Do you have any preference as to type of program you enjoy (e.g., practical programs of garden help, travel programs, picture programs, or what have you)?

Your committee wants to give you the programs you like best and find most helpful, so answers to these questions and any suggestions you may have will be most gratefully received.

Your Program Committee.

GARDENING INDOORS

By HELEN MARSH ZEINER

ALTHOUGH frost has put an end to outdoor gardening activities, we can still pursue our gardening hobbies indoors. To be successful indoor gardeners we should recognize that for plants, at least, conditions within our homes are far from ideal. Most homes are too hot and the air too dry to suit plants. Often we put the plant where the light is inadequate and then wonder why it doesn't grow. Sometimes minute amounts of gas fumes unrecognizable to us keep the plant from being healthy. If we are honest enough to recognize the faults of our homes we can compensate by either modifying the unfavorable conditions or by choosing plants which will grow and be beautiful in spite of them. The latter course is by far the easiest to follow.

We should all be familiar with a few general principles of plant care. The first of these is watering. Frequently we are asked, "How often should I water my plants?" There can be no definite answer to that except to say that plants should be watered when they need it. Rather than watering your plants every day, or every other day, examine them at regular intervals and water only those which need water. There are several ways of determining this. An excellent method for clay pots is to tap the pot with your knuckles—a hollow sound indicates need for water; a dull thud indicates the soil is moist enough. Another good method is to take a pinch of soil between the fingers—you can soon learn to recognize the feel of dry soil, moist soil, or too wet soil. Another method is to note when soil changes color from dark (moist) to light (dry). When the plant needs water it should be

saturated but never permitted to become waterlogged. A good soaking once a week with a chance to dry out between waterings is better than a light watering every day which may leave the plant either too dry or too soggy.

Some prefer to water from the top, others advocate only watering from the bottom, allowing the plant to stand in water until the soil at the top of the pot is moist. Either method can be satisfactory. Dangers of top watering are that water may merely run down between soil and pot without really soaking the soil, or water may stand around the crown of the plant and cause rot, or splash on the leaves and cause leaf spots. Careful watering from the top eliminates these difficulties, so use the method you prefer. Just remember to water when water is needed, giving enough to thoroughly moisten the soil, but not permitting the plant to stand in water so that it has "wet feet".

House plants benefit from an occasional washing—not only from the esthetic value of removing unsightly dust, but also because plants carry on an exchange of gases in the air through minute openings in the leaves. If these openings (stomata) are clogged with dust it interferes with the normal life processes of the plant. The common practice of wiping the leaves of plants with oil to make them shine is frowned upon, since the oil clogs the stomata.

Leaves may be easily washed with a small rubber syringe, a shower bath or faucet spray, or by wiping each leaf gently with a soft cloth or sponge. Soapy water applied with a soft cloth and thoroughly rinsed off will aid in the prevention of insect pests.



Left, Nephthytis; right center, Chinese Evergreen; Right, English Ivy.

Spraying foliage will to some extent compensate for lack of humidity in the air. Grouping plants together or setting the pots in trays of moist sand helps create a humid atmosphere in the vicinity of the plants.

In selecting soil for your plants, avoid either heavy clay or light sand. A good general purpose potting mixture is equal parts of garden soil, sand, and peat. This formula may be modified depending on the texture of the garden soil available; a light soil may need little or no sand, a heavy soil may need more. Leaf mold or compost is a good substitute for peat.

House plants will benefit from the addition of fertilizer from time to time as the plant in its manufacture of food exhausts the supply of nutrient materials in the soil. Well-rotted

manure is always satisfactory but not always easy to obtain. Bone meal is safe to use as it is slow-acting and there is no danger of "burning" the plant. Two or three tablespoons may be mixed with soil for an eight-inch pot at potting time, or one-half teaspoon to a six-inch pot or one teaspoon to an eight-inch pot may be sprinkled over the soil. There are many excellent commercial fertilizers which most of us find convenient to use. Be sure to follow the manufacturer's directions, for it does not follow that if a little is good, more will be better.

There has long raged a controversy between the clay pot advocates and the glazed pot enthusiasts. Plants can be grown satisfactorily in any kind of a pot—even in tin cans—if we use good judgment about watering and

take precautions to provide drainage. In buying any kind of a pot, it is best to select one with a drainage hole in the bottom. Glazed pots or jardinières with no drainage holes are dangerous, for the plant may become waterlogged. If you use such a container, put a good layer of coarse pebbles in the bottom to aid in drainage. If you use a large jardinière in which you set another pot, raise the pot up on something such as an overturned pot-saucer. Frequently remove the pot and pour out any water that is in the jardinière so that the pot never stands in water. Clay pots have many advantages and for the amateur are probably the best bet. New clay pots should be soaked before using so as not to draw too much moisture from the soil.

In potting, provide for drainage by putting a few pieces of broken pot or several large pebbles in the bottom of the pot. This applies to any pot, whether or not it has a drainage hole. Then add moist soil to bring the plant to the right height, set plant, fill the pot and firm the soil around the plant with your fingers, taking care not to pack the soil. Strike the pot on a table a few times to settle the soil. Leave half an inch or an inch at the top for watering.

A plant grown in the same pot for some time may become pot-bound; that is, the root system has become so extensive that the roots are matted and twisted and tend to form a ball around the earth. If the plant is to increase in size or produce vegetative growth, it must be repotted. A plant grown too large to be attractive in its present container also needs repotting. Such plants can be put in the same size pot if the roots and top are both pruned; if the large plant is desirable, use a size larger pot and

disturb the roots and top as little as possible.

Plants can be prevented from reaching too large a size or a scraggly appearance by pruning or "pinching back". This involves taking out buds at the tip when they are very small, or cutting back a branch to the point



Nephthytis

where it joins another, or to a point just above a leaf, thus leaving no ugly stub.

House plants benefit from occasional cultivation with a stick or a fork, taking care to keep such cultivation shallow so as not to injure the roots.

Fortunately, house plants have few pests, and most of these can be prevented by washing plants and keeping them healthy. Plant lice or aphids do sometimes occur, but can be easily controlled with nicotine sulfate. Mealy bugs, those fuzzy white bits of "cotton" so fond of coleus, can be disposed of by dipping a match in rubbing alcohol or kerosene and touching each bug. Red spider is a pest in hot, dry houses, and is especially fond of ivy. Frequent washing usually prevents red spider. If it gets a start, try nicotine sulfate, dusting sulfur, or a commercial red spider spray. Scale insects may occur. These brown "scales" can be removed by washing. An old toothbrush is helpful in loosening them, and a thumbnail is even better. Don't mistake the symmetrical rows of brown spots on the underside of your fern leaves for scale; these are reproductive structures of the fern and quite harmless.

We should not forget that light is essential to a plant. Some plants require sun, while others will live with little or no sun, but all must have light. If you use a plant for decoration on a table where it receives little light, set it near a window part of the day, and choose a plant which requires little light. In general, flowering plants require sun, while foliage plants will live without sun.

House plants need a rest period. Summer is the ideal time for this. To rest the plant, place in partial shade, give it no fertilizer and less water. The pot may be sunk in the ground outside. In the fall, bring the plant in, increase the water and fertilize as needed, and it will resume active growth.

There are many beautiful plants which will tolerate the adverse conditions to which we subject them. Some of these are so hardy that they

will stand almost any abuse, and even a rank amateur can raise them successfully. With such plants to choose from, anyone can have growing plants to brighten the winter months. Among these easy to grow plants are:

Nephtytis—This is a handsome foliage plant with arrowhead-shaped leaves. It can be trained to be vine-like or it can be pruned as a low pot plant. *Nephtytis* is very tolerant of little light, and is one plant which can be grown away from a window—if it visits that window occasionally. Easy to root from cuttings, it is a simple matter to start over if the plant grows out of bounds.

Peperomia—The *Peperomias* have shiny, rather thick spatulate leaves and may be variegated or plain. If given room to expand they become very large, but they will tolerate crowding in a small pot where they grow slowly and with a little pruning can be confined to a small container for a long time. They are easy to root from cuttings.

Aglaonema or *Chinese Evergreen*—This is a foliage plant with glossy green leaves. It will grow in water or soil, and will tolerate lack of light extremely well.

Sansevieria or *Snake Plant*—Variegated, sword-like leaves characterize this hardy plant. When attractively potted and shining clean, *Sansevieria* is a very attractive addition to the winter indoor garden.

Pandanus or *Screw Pine*—The *Screw Pine* has striped or banded sword-like leaves usually bordered with spines. The leaves grow from a center crown which should be kept dry to avoid rot.

Aspidistra—The names of "Cast Iron Plant" and "Saloon Plant" indicate the hardiness of this old standby. When very dark green foliage is needed, this plant is a good choice.

There is also a variegated variety.

Coleus—*Coleus* plants with their leaves of many hues provide a spot of color. Fast growers, they need pinching back to keep them shapely. Too much water causes the leaves to drop. These plants can be set outside in the summer to brighten the border, and new plants for winter use started from slips.

Philodendron—The "Devil's Ivy" is a wonderful vine for adverse conditions. It grows well in soil or water, will tolerate lack of light, and is subject to few insect pests in contrast to English Ivy which may get red spider. As it grows, it tends to become long and stringy. Then it is a simple matter to cut the long bare branches off and start over with fresh slips. The plant roots well, although slowly.

Tradescantia or *Wandering Jew*—These viney plants do well in water. There are plain green and variegated varieties, the most handsome being silvery green and purple. They may bloom with tiny lavender or bluish flowers.

English Ivy—There are many kinds of ivies to choose from. While they are not as fool-proof as *Philodendron*, they are not difficult. Red spider will attack English Ivy, especially if it is grown where it is hot and dry. Frequent washings usually prevent these pests from getting a start.

Begonia—*Begonia semperflorens* is the common small flowering begonia with which most of us are familiar. It is a good choice for blooms in the indoor garden, and may be had in white, red, or pink. There are double varieties available. It likes some sun and must not have wet feet. Other than that, it requires no special care and will bloom all winter.

Geranium—If you have a sunny place, you will want at least one geranium. Give it rather heavy soil, and keep it pinched back to make a



Philodendron on weathered burl.

bushy plant. Slips taken in the spring are sure to give you winter bloom, but fall slips may not bloom until towards spring. Geraniums which have bloomed all summer in your outdoor garden can hardly be expected to bloom all winter, too. Start over with slips.

Impatiens or *Sultana*—This delightful old-fashioned flower with its translucent stems and pink blooms is easy to raise and will bloom all winter. It is best started from cuttings in the fall, as it grows rapidly and will soon be a blooming plant.

Bulbs—The addition of a few paper white narcissus bulbs should not be over-looked. Unless you have a cool dark place to start them, they had best be omitted.

Novelties—A few novelty plants always add interest to the indoor garden. Among these plants may be mentioned the rooted yam which can be pinched back to keep it from becoming too long and stringy and which will be a lovely vine for a long time. Grapefruit seeds planted in a low copper bowl make a lovely centerpiece. The lowly carrot, beet, horseradish, or even turnip will make an attractive short-lived plant. Cut the top off, leaving about an inch of flesh, and place in a shallow dish with water. The leaves will develop and stay pretty for some time. Interesting arrangements can be developed around these.

Annuals—You might bring in some of your favorite annuals for bloom in a sunny window.

WINTER PROTECTION OF ROSES

By A. E. ALBERA

President Denver Rose Society

ACTUALLY, there has been very little research done on cold hardiness in roses and most of what we know is drawn from analogy. Most cold injury is believed to be due to desiccation of the plant tissue. Occasionally canes may swell and burst. We do know that once a rose is thoroughly frozen, even though it lives, it has been greatly devitalized.

Hybrid tea roses are semi-hardwood plants that are a mixture of a great many strains and no two varieties are exactly alike in their resistance to cold. Roses commonly spoken of as hardy, which are actually hardiest to frost, are apt to prove tender in climates with great extremes of heat and cold occurring alternately, where spring or fall freezes are followed by warm days. They are unable to bear the fluctuations of climate when it occurs intermittently.

Since hybrid tea roses are not entirely winter hardy it would seem in a region where we have protracted periods of subzero weather, followed by occasional warm days, the practice of hilling earth 8 to 10 inches high around the base of the plants is the correct method. While many prefer to pile leaves, straw, and various other materials between and over the earth mounds, in an attempt to protect the upper structure, little is gained by this extra work. Any materials capable of compaction, such as manures or peat moss, should not be put in the beds for winter protection. In the winter when these materials remain moist for long periods of time they are apt to become more injurious than beneficial. Evergreen boughs piled over the earth mounds are often recommended. They serve

the purpose of retarding, to a certain extent, freezing and thawing.

If for no other reason than to protect the base of the canes from the drying winter winds and to help retain moisture, all semi-tender roses should be covered with clean earth. Clean up as much fallen rose material as possible before hilling. Soil used to cover roses should be free from partly decayed organic matter. It is safer to use earth from the shrub borders, or better still, subsoil, rather than to scoop earth from the beds.

It is not necessary to apply any manner of protection until the plants are dormant, or a few weeks after the first killing frosts. It is also good advice to water the beds thoroughly about the time of hilling.

Unless the plants have grown exceptionally tall and are in danger of being loosened in the ground by winter winds, it is not advisable to remove any wood until spring.

Questions and Answers

How deep should I plant Lilies?

S. R., Cheyenne.

The depth of planting is dependent on the habit of growth. There are some kinds with roots at the base only and others with roots on the stem as well. The Madonna is a good example of the former. Plant about twice the depth of the bulb. It should be mentioned here that this lily does not require rich food. The better known stem-rooters are auratum, regale, philadelphicum, speciosum—all needing deep planting. Lilies do not like being crowded, so when setting in a bed with other plants, see that these neighbors are not of the quick-spreading, strong-growing types. H. F.

JUST CALL ME SPINELESS

By ELIZABETH NIXON ECKSTEIN

WHEN it comes to spines, I have no backbone! That is, if the spines are on a cactus. There's no middle ground about liking cacti. (That's the plural, to be used when referring to more than one of the darn things.) You either do or you don't. If you do, you are on the way to becoming a cactophile. And for that, friend, there is no cure. All you can do is seek out others likewise afflicted—and have the time of your life! Once cactus spines prick your interest instead of just your hand (or some other part of your anatomy) you are committed to collecting, buying, trading and growing these most fantastic of all plants.

It is hard to tell just when my case of cactusitis began, but in retrospect it appears that the symptoms had been evident for some time before I actually broke out. Soon after we were married, my husband and I were browsing through the dime store. As we passed the flower counter, the clerk was just unpacking a shipment of cacti. The queer, angular arms of an especially green specimen made me gasp.

"Do you like cacti?" queried my horticulturally-inclined spouse, beaming.

"Yes, I do," I confessed.

"So do I," he dittoed jubilantly.

And that was it! We left with the angular one and two more—a round woolly ball and a flat-pad with cinnamon colored spines. A simple beginning. But the spark that had smouldered so long now leaped into flame. Thereafter, we haunted the five-and-ten flower counters and became familiar figures in every florists' shop. For two years our cactus collection expanded like the national

debt. Practically everything else was moved from the glassed-in south porch, where tiers of shelves from floor to ceiling held scores of cacti—every size, shape, color, and kind.

Then we began coming home empty handed. We had exhausted all the local markets, so our collecting pace slackened. But only temporarily, for we discovered the amazing catalogs of the specialized dealers. We hankered for a few "Specimen Plants"—mature showpieces—to add zest to the collection.

Reading the catalogs made us aware for the first time of another fact—the widespread existence of other cactophiles. So-o, others had the bug! There was an active group right in our own city: THE DENVER CACTUS AND SUCCULENT SOCIETY, part of a nation-wide organization holding regular meetings and biennial conventions. In fact, Denver's bid for the 1951 conclave has been accepted, and the Mile-high City hopes to give the spine-lovers a sharp time next July.

Europeans scooped us by a hun-

Back right: Opuntia vestita; Old Man Opuntia. Front, right: Rhipsalis cereuscula; Rice Cactus. Back, left: Carnegiea gigantea; Saguaro. Front, left: Mammillaria elongata.



dred years in glorifying the cactus. But American interest is now growing by leaps and bounds. Thus another prophet gains belated honor in his own country, for cacti are 100% Americans, in the best sense of that expression. They have cousins in other parts of the world—other succulent or drought-resistant plants, often with spines, too. But all true cacti are natives of the Western Hemisphere. They are believed to have originated in the West Indies, later spreading to the mainland. Now cacti are at home from Canada to Tierra del Fuego, and from Atlantic to Pacific.

The jungle types may trail among the trees like vines and produce flowers a foot in diameter, rivalling the orchid in exotic beauty and fragrance. Others, on the desert, may be so inconspicuous that only the most practiced eye can distinguish them from the surrounding sand. A cactus may be so minute as to resemble a tiny pebble, or like the giant saguaro, it may attain a height of fifty feet, a weight of many tons, and a venerable age of two hundred and fifty years.

Mexico can boast more native varieties than any other country. In the United States, all but three states have some native cacti. But the great Southwest region really hit the jackpot. Colorado is among the leaders, with twenty-six known species, distributed from the towering Continental Divide to the eastern plains and the dry mesas of "Four Corners."

Cacti, although rugged individuals, are marvels at adaptation. If you decide to entertain one of the hardier types as a house guest, it will be equally content on an apartment window sill with scant sunlight, or in a spacious conservatory. If you water it conscientiously once a week, or leave it without a drop for a month seems to make little difference.



Back: *Mammillaria tetacantha*. **Right:** *Chamaecereus silvestri*. **Left:** *Opuntia vilis*. **Front:** *Notocactus mammulosus*.

In nature, if a cactus is exposed to strong sunlight for long periods, it develops heavy spines closely interlaced to form a protective covering that prevents excessive loss of moisture. It tends to be globe-shaped, to provide maximum storage space for water and minimum surface for evaporation. Instead of being smooth on the outside, the sun-loving varieties of cacti have ribs or tubercles which contract in time of drought and expand like an accordion when moisture is available.

If "variety is the spice of life," the cactus is nature's spiciest species. Their shapes are more varied than a roomful of club women.

"But they are ALL sticky things," you say. Well, not necessarily. Some cacti have no spines at all. Others have spines that are more like feath-

ery plumes, or thin wood shavings, or long gray hair.

"And those horrible Latin names!" you persist. All right, don't bother at first about any high-fallutin' monikers. Enjoy your "Peanut" cactus by that humble name as long as you wish. But mark my word, the day will come, when with great pride and satisfaction, you will re-christen it *Chamaecereus sylvestrii*. The name-system is logical and fairly simple, once you have a clear explanation. But that is another story.

The main thing is to make the first

move toward becoming acquainted with the cactus family through one of its members—ANY one of them. Choose a little feathery one, a gangling prickly pear, or a fierce-spined devil claw—whatever strikes your fancy. At first you will be literally "stuck with it," but that horny exterior harbors beauty and personality that does things to you. And who knows but you, too, may soon be admitting that "when it comes to cactus, I have no back bone. Just call me spineless!"

TURN YOUR THUMB GREEN THIS WINTER

By REBECCA ENOS

SUMMER flowers blooming indoors in the dead of winter! Could any thing be more cheerful! Why not try growing them yourself, and see how easy it is. Everyone has at least one window they could use. Plants shouldn't be too much trouble if their care is simplified to the minimum of effort on your part.

I grow flowers in a low bench that was made to fit into a large bay window. The legs of the bench are made of old stairway spindles cut off, and the front is faced with walnut. Its three sections are screwed together for convenience in moving. The three galvanized trays hold eighty five-inch pots, which sit on an inch of gravel. I pour water into the pans with a bucket. It is always warm water for everything including the African violets.

Occasionally I sprinkle everything in the benches with a bulb spray, holding a newspaper at the far side to keep the water off the floor. I spray for insects the same way. Fishing worms sometimes come in with

the garden soil, and they aren't so good in pots. Baking the dirt beforehand or steaming it would take care of them, but I dislike the thought of baking worms, or stewing them either, so I do something which I certainly do not recommend to any one who is at all careless. I dissolve bichloride of mercury tablets in water until it is a distinct blue (always in pottery or enamel) and water the plants with it, just enough to completely wet the dirt clear through.

Keeping your equipment all together in one place is a time saver. I keep the watering bucket in a closet close by and woe be to anyone who moves it. As a matter of fact, I kept my pet shovel in my dress closet last winter just to be sure where it was, come spring!

Nothing being too good for my flowers, I took over one shelf of the secretary by the bay window, in which to store everything I work with. There is powdered tobacco, which bugs don't like, and which is a fertilizer as well; plant tabs; Vigoro;

a few stakes for wandering plants; twistums, which are little wire ribbons that help to hold plants to the stakes; the bulb for spraying; a bug bomb, and a sponge. The right kind of bug bomb, used right, has never injured anything for me. The sponge is used to soak up excess water.

As for the flowers themselves, I never bring in old plants, because transplanting sets them back too far. Younger ones bloom much quicker. Late in the summer I dig up seedlings, or plants that have been slow in starting and aren't too large. Sometimes I plant seeds in the middle of the summer directly in the pots. Plants that grow spindly I cut off, one side at a time so the other side is blooming right along. Petunias do well this way. The geraniums are grown from slips taken from the succulent ends of old plants. I allow them to grow tall during the summer to make broken shade for the tuberous rooted begonias and African violets.

Coleus are nice for color, impatiens is good, balsam, hardy larkspur blooms for a long time, nasturtiums, especially the ones that are sold in a ball of moss, calendulas—most any of the annuals will do well if given half a chance.

If you want spring flowers during the winter, plant the bulbs in pots during the fall, bury them in a trench about a foot deep, and put something on the ground which will keep it from freezing too hard, which makes it difficult to get the pots out. Ashes would do, or straw or planks. Bring several pots at a time into a cool place in the house until they have grown a bit and then into a warm room which will force them as fast as you want them. Put calla lilies in pots on the back stairs until they are interesting enough to rate the living room.

Any window having sun part of



African violets and Syngonium.

the day can be used for flowers by attaching brackets to the sill and using the long narrow type of cookie tins to hold the pots.

Flowers do not like a sudden change of temperature any more than you do, and they don't like standing in water too long either.

Just use a lot of common sense with flowers. Don't be afraid of transplanting a sick flower. It would probably die anyway. Turn it out of its pot and find out what is making the trouble. You will learn that way and you will be surprised some day if you notice that your Thumb has turned into the brightest of Greens.

WANT TO KEEP FALL LEAVES THROUGH WINTER?

Eleanor Ross, New York writer, gives the following formula for preserving leaves:

"First, spread the leaves and press them in a pan with alternate layers of fine dry sand which has been heated as hot as the hand can bear. After the sand cools, the leaves are removed, smoothed with a hot iron, dipped in a special varnish and allowed to dry.

"To make the varnish, soften eleven ounces of gelatine by soaking it in cold water, then dissolve it in nine ounces of pure glycerin which has been heated to 212 degrees F. When properly prepared this varnish is colorless, pliable and wax-like.

FREEDOM OF THE WILDERNESS

By GEORGE W. KELLY

WITH talk of war on every side, all of us are thinking again of the values and freedoms that we have fought for before and may fight for again. There are the familiar freedoms of speech, religion and actions that are rather tangible and readily realized, but I feel that there is another freedom, that though less apparent, is one of the essential things that we have, and would fight for. This is the freedom to go to unspoiled and natural places where we may observe Nature as she has worked since the beginning of time, unchanged by the action of man.

The fall of once great nations has been attributed to the exhaustion of the soil, to the elimination of the forests and destruction of the "blotter" of vegetation that held the life-giving soil in place from the effects of wind and water erosion. No one can deny that these have been the obvious reasons, yet I am sure that there was in each case a less obvious, but equally important reason, the destruction of the natural beauty, and wilderness effects from the whole country side. We are learning more and more the truth of that great statement that "man can not live by bread alone." Man must have inspiration and beauty and an occasional feeling of closeness to Nature and the infinite. Without this inspiration of the unspoiled works of Nature, man becomes almost an animal, living for eating and reproduction alone. Such is the case in many of the over-populated areas of the world, and they are on their way out.

We, in this United States, feel that we want more than merely enough to fill our stomachs. Wars would be not worth the effort for just that—

we want something inspiring to live for as well, and I believe that by planning with vision for the future we can have both.

Colorado is increasingly being recognized as a place to come to enjoy the wild unspoiled places, that other states, in their intensive commercial development, do not have or have let become destroyed. Those who have vision for the future should now begin to preserve this natural heritage of ours, which may become our greatest asset. And, while we preserve these wilderness areas for our citizens' benefit and for the pleasure of our visitors from other states we will be, incidentally, building up a permanent business which well may become our greatest—the tourist business.

Our existing National Parks are becoming so crowded that there is great need of additional places where people can go for the enjoyment of the out-of-doors.

I am concerned about the proposal to build dams in Dinosaur National Monument not only because I feel that it will be destroying irreplaceable attractions, but because it will establish a precedent which will allow none of our scenic attractions to be immune to commercial development.

Many of the arguments in favor of the dams are misleading as to the values affected. The facts are that Dinosaur's chief attraction is in the Wilderness effects—the deep canyons and rushing waters. These will be destroyed by building of dams and cannot be replaced by lakes of still water. The necessary development of roads and construction mechanics will destroy much of the character of this



Pat's Hole and Steamboat Rock in Dinosaur National Monument.

area even though it will give greater access — access to what — to a lake which would be like hundreds of other lakes, rather than an incomparable natural canyon.

If, as some would have us believe, there were no other sites for power and irrigation dams, we might concede that this area should be destroyed to provide a mere living to a few people; but there are plenty of other places to build dams for

storage of water and irrigation, while there is no other Lodore canyon.

Secretary Chapman has passed the buck in this controversy between his two departments, and now it is up to Congress to approve and appropriate. It is up to us to tell our congressmen that we do not want this canyon, which belongs to all of us in this state and these United States, to be destroyed for the benefit of a selfish few.

TRAIL RIDERS BELLS-SNOW

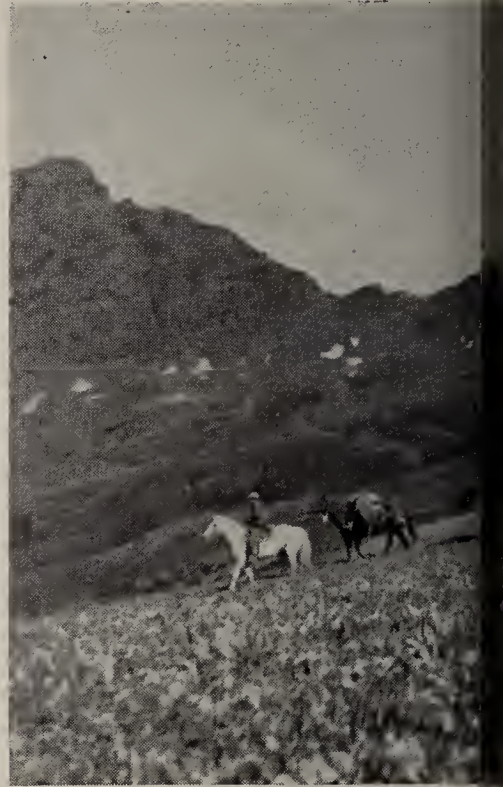
By G



*Red Mountain near head of
Crystal River.*

THE American Forestry Association invited me to lead one of their annual rides into the Maroon Bells-Snowmass Wilderness Area this year, from August 2 to 14. While I had been into this country several times and had climbed most of the 14,000 foot peaks there was much of the route taken which was so inaccessible that I had not seen it.

The U. S. Forest Service people modestly describe this region as "including some of the most picturesque and interesting country in the state." It is almost impossible to give an adequate impression of the wildness and



One Section of the pack

beauty of this magnificent country. The mountains are so high and rugged, the valleys so deep and carpeted with multicolored flowers, the distances so great, the colors of rock, tree and sky so vivid that one can see it to comprehend it.

This trip is one of the many arranged by the American Forestry



The real leaders of the trip; Tommie and John. Mrs. Rich Thompson planned the food, arranged for the horses and kept everybody satisfied. She knew everybody's first

Looking out of the primitive forest on to Scofield Park



LORE MAROON WILDERNESS

KELLY



down from Triangle Pass.

ociation into the wild and little
own areas of our country. This is
non-profit service planned to ac-
int more people with the value of
se areas and the importance of
serving them. Arrangements for
ses, food and camping are done
competent local people; in this
e the now famous Mrs. Rich



*Looking from Buckskin Pass to Hager-
man, Snowmass and Capitol Mountains
and Suowmass Lake. Pack train coming
up the slope.*

Thompson, who, after the first day,
is known as "Tommie" by all.

From Glenwood Springs we took a
bus to the old town of Marble for
our first camp and the adjustment of
everyone to a suitable horse and sad-
dle. About every other day was a
rest day so that there was ample op-
portunity to botanize, fish, take pic-
tures or just enjoy the country. The
route led up the north fork of The
Crystal River, by Geneva Lake, over
Trail Rider Pass to Snowmass Lake,
over Buckskin Pass to Crater Lake



*name. John Schutte lives for
these yearly trips in his fav-
orite country. His pictures of
this area are well known.
During his 11-month vaca-
tion he is postmaster of Glen-
wood Springs.*

*Geneva (Little Snowmass)
Lake with Snowmass moun-
tain in background.*



at the foot of the Maroons, over West Maroon Pass to Scofield Basis, by the old ghost town of Gothic to Copper Lake and over Triangle Pass to Conundrum Hot Springs.

Some of these Passes were around 13,000 feet in elevation, so that some of the Eastern "flatlanders" found it difficult to keep their eyes open while crossing. On this trip there were 29 guests and 16 crew members, which required a total of 84 horses for rid-



Part of the line of riders.

ing and packing. This took some expert managing to keep all humans and horses happy.

The geology of the country was fascinating. Evidence of great upheavals and glacial action was everywhere. Two impressions are always gained here: the looseness of the rocks and their vivid colors, red and white mixed with no apparent rhyme or reason. There was plenty of evidence of wild life, but naturally with such a large group, few of the larger mammals stayed around for close observation. Small parties saw deer, elk, and mountain sheep. Marmots, chipmunks, camprobbers and conies were seen frequently. Some of the valleys at about 11,000 feet elevation were a



Camp at Snowmass Lake with Hagerman Mountain in Background.

riot of color with wildflowers of a great variety.

Evidence of overgrazing was not so apparent over much of the route as the sheep men plan to keep their herds away from this route so that their damage can not be so readily observed. Some members of the party did hike over the hills and saw the contrast in the areas which had been grazed. Lessons in conservation of forests, grass and soil were learned at first hand.

All who have been into this almost unspoiled country are enthusiastic boosters for the plan of the U. S. Forest Service to keep areas such as this in as nearly natural and unspoiled condition as possible.

Upper end of Lead King Basin.



OUR VANISHING BUNCHGRASS

E. D. SANDVIG

Chief, Division of Range and Wildlife, U. S. Forest Service, Denver, Colorado

MANY of our early western explorers have described the abundance, quality, and beauty of bunchgrass. When Lewis and Clark reached the Upper Missouri River country, they said: "This is a fine country; good water; good grass; plenty of buffalo. With this region free from snow, the country looked not unlike fields of yellow grain ready for the reaper's hook."

Granville Stuart was also deeply impressed with the grass cover he saw. He records in *Forty Years on the Frontier*: "We crossed the Rocky Mountain Divide on the tenth day of October, 1857. As soon as we had crossed . . . a wonderful change appeared in the country. Instead of the gray sagebrush covered plains of Snake River, we saw smooths rounded hills and sloping benchland covered with yellow bunchgrass that waved in the wind like a field of grain."

What has happened to these wonderful bunchgrasses? Have they, too, disappeared from the foothills and the mountain grasslands like the buffalo? To an important extent, the answer is "yes".

In Colorado, Wyoming, Utah, and northern New Mexico, a special kind of bunchgrass grows, commonly known as Thurber fescue. Its scientific name is *Festuca thurberi*, in honor of its discoverer, Dr. George Thurber, a professor of botany and horticulture at Michigan Agricultural College. Many other western plants bear his name.

Thurber fescue thrives best at elevations between 7,500 and 12,000 feet, in rather rich, sandy loam soil. It grows in large bunches and oftentimes reaches heights of over three

feet. Almost pure stands of this grass were not uncommon at the turn of the century: for example, photographic records made by Dr. Sudworth in 1898 on the Grand Mesa National Forest show its prevalence. In 1908 and again in 1915, pictures taken on Owens and West Divide Creeks of the same Forest irrefutably testify to its abundance at that time.

There are spots where good bunchgrass cover is still in existence. In Beaver Park, near Norwood, a good stand of Thurber fescue is maintaining itself on cattle range. And, in the shadows of Mt. Wilson on the San Juan Forest, a group of ranges used by sheep, support good stands of this valuable grass. There is a sprinkling of other areas where, because of conservative use of the range, or its inaccessibility, the bunchgrasses have held their own.

Over too wide an area, however, the bunchgrasses have disappeared, and are replaced by plants less valuable both for the production of livestock forage and watershed purposes. On the Grand Mesa areas indicated, it is difficult to find, today, bunchgrass growing in solid stands. There remain remnants, only, of the species, and these are most often hidden under the protective mantle of big sagebrush, snowberry, or shrubby cinquefoil. These plants are less relished by grazing animals and, therefore, Thurber fescue has found safe refuge from foraging animals among their woody stems. Fortunately, too, the pioneer miners at Black Hawk and Central City fenced in their burial grounds and saved many members of the bunchgrass family from almost complete extinction in that area. At Dory



Hill Cemetery, a few miles above Black Hawk, not far from Denver, an excellent cover of Thurber fescue, mixed with California oatgrass, sheep fescue, and other survivors of the lush, bunchgrass days, can be seen.

In California Park on the Routt National Forest, only a few "museum" specimens of the once abundant bunchgrasses remain. Within the fences of the cemetery along the banks of Little Snake River near Savery, Wyoming, vigorous representatives of the wheatgrasses and bunchgrasses are again on display. Immediately outside the fence, however, that exotic European invader, *Bromus tectorum* commonly called "cheatgrass", has captured the ground surface.

Students of grass, it would seem must, sometimes, go to the burying grounds of the dead to find live, vigorous, healthy grass, because so much of the grassland outside is in weak-

ened, deteriorated condition over our range country.

Fortunately, however, uncontrolled grazing of cattle and sheep has not occurred uniformly over all of the West. The bunchgrasses can be restored by starting now to practice conservative grazing. In the words of Forrest Shreve of the Desert Laboratories, Carnegie Institution, Tucson, Arizona: "The need for the application of remedial measures in restoring or saving our grazing lands is urgent. We must do as much as we can as soon as we can. So great is our concern that we would like nothing better than to be able to restore them overnight. We are in much the same position as a man who felled a 200-year-old oak in his lawn and then, regretting the loss of its shade and beauty, has decided that he would like to have it back again."

Repeated experiments in bunchgrass range types prove conclusively that

conservative grazing pays rich dividends in more pounds of beef per animal, more cash per acre of land, and improved watershed cover. Within the fence at Dory Hill Cemetery, water is absorbed into the ground in less than a third of the time it takes on the heavily-grazed range outside. The rich, fibrous roots and root hairs of the healthy bunchgrasses, together with the residue of leaf blades and seed stalks that form mulch on the ground surface, capture the moisture much the same as an ink blotter. As the ground becomes saturated, water is slowly released over the surface and to underground sources. Thus is the water "walked downhill" for municipal uses, for farms, orchards, and in-

dustries, instead of tearing its way unimpeded down each stream course, carrying with it top soil, plant nutrients, and a good portion of the brush growth and aquatic vegetation that are essential for stream-bank stabilization.

It should be obvious, then, that the bunchgrasses can do a job for us in steadying our stream flows, in giving us clean, clear water, in holding soil in place on steep mountain sides, in supplying needed forage for livestock and game, and in keeping our country productive and strong. But, it should be just as obvious, to the knowing ones, that these things are no more than paper possibilities so long as our bunchgrasses continue to vanish.

A GREAT FRIEND FACES DESTRUCTION

By W. D. THOMAS, JR.

Colorado A & M College, Ft. Collins, Colorado

WITHIN the memories of most of us remains the pleasant taste of chestnuts roasted in our fireplace on cold winter nights. But these remain only memories, for the chestnut, itself, is little more than a memory. Shortly after the turn of this century Chestnut Blight entered our country from Asia and made short work of the chestnuts we treasured so highly.

In 1932 the revered elm's turn came with the introduction of Dutch Elm Disease into Ohio from Europe. In ten years' time the ravages of this disease left thousands of stump spectres along the parkings of hundreds of city blocks throughout the Midwest and New England. Our reservoirs of elm lumber have been seriously depleted.

Now another old friend, with a grand history of sturdiness, is threatened with similar destruction. Who of us has not played with acorn cups

when we were kids? And certainly we all have borrowed the motto, "Big oaks from little acorns grow." But, at the rate the oaks are going, this motto will soon be an echo from the past!

Tree lovers in the Upper Mississippi Valley have been concerned for several years about the dying of the oak trees in that region. The disease was first called to the attention of foresters in 1881 in Wisconsin by State Forester J. A. Warder. But little attention was given to this report in an obscure local horticultural society's journal. Again, in 1912, Dr. Carl Hartley made an official report to the Division of Forest Pathology of the U. S. Department of Agriculture concerning the disease. Yet it was allowed to continue taking its insidious toll of black and red oaks in Wisconsin. Not until 1937, when Rolland C. Lorenz and Dr. Clyde



Oak wilt spreading through a farm woodlot in northeastern Iowa.

M. Christensen, forest pathologists at the University of Minnesota, mentioned the occurrence of the disease in the Lake and Central States, did many people take notice.

During the ensuing six years the disease made serious inroads on the oak forests of Wisconsin, Minnesota, Iowa, Illinois, and had entered Missouri. Teams of plant pathologists rallied to the emergency in Wisconsin and Iowa in an attempt to learn more about the disease, and to try to find some means for its control.

By 1943 fine oaks were missing in lawns and parks throughout the area. The public was becoming aware that something was amiss with the oaks. Moreover, the cost of removal was being felt in the dollar column of the losses. State forests and parks were being riddled with bare skeletons of once-majestic oaks and the bronzed ghosts of trees recently dead but still clinging to their wilted leaves.

Farmers were beginning to feel the blow of the epidemic by now, for their woodlots were important sources of income. In Wisconsin alone Walter Ebling, Statistician for the Wisconsin Department of Agriculture, estimated that the annual income from farmers' woodlots averaged

about 14 million dollars, and oaks averaged about 80 per cent of the woodlands in production. Consequently, in just Wisconsin the average annual income from oaks was approximately 6 million dollars. Since much of the reproduction in oak forests is through the growth of sprouts from old stumps, once a tree became infected its potential production was lost completely. Undoubtedly oak wilt had become the most important disease of oaks in the United States, and surely one of the most threatening disease problems facing forest pathologists!

But what was the cause of this wilt of oaks which suddenly flared up in unprecedented proportions? Was it the weather? Was it some mysterious virus? Or was it fungus or mold? Dr. B. W. Henry, with his team of pathologists in Wisconsin, separated the disease agent from the oak in 1943, and described it as a fungus, *Chalara quercina*. This gray-green mold thrives in the blood stream of the oaks, known by plant scientists as the vascular system, causing the area between the bark and the wood to become brown. As the brown color develops the fungus chokes off the supply of food between the roots and

the leaves by blocking the flow of sap, and destroying the tubes carrying the sap.

The appearance of dead trees was found to be slow at first, the wilted trees heralding epidemic being evident at the edges of woodlands. From here the disease spreads in a circular manner, a few more trees dying each year. But by the time the pathologists had learned something about the fungus enemy of the oaks bronzed, distorted and drooping leaves were evident on twigs and entire trees scattered generously about an area of thousands of square miles.

No respecter of individuals, *Chalara* makes its way into all oak trees. However, Dr. Henry and his team have found that white and bur oaks were better able to withstand the attacks by this villain than were other kinds of oaks.

Two very important questions re-

main to be answered: how does this disease spread, and how can it be controlled? The first question thus far remains unanswered. The solution to the second question is in part dependent on the first. Still, first aid can retard the spread of the malady through the removal of badly infected trees, and by pruning or topping of trees which are only partly infected. But these sanitary measures are only stopgaps in the fight to slow down the march of this most relentless foe of the oaks, *Chalara quercina*, the firing pin of oak wilt!

Although its spread is comparatively slow, it is relentless. If the sweep of oak wilt through our Middlewestern oak forests is not stopped in the near future, the oak will join the chestnut and elm riders in the sky as ghostly reminders of the potential havoc lurking behind every tree in the forests of North America.

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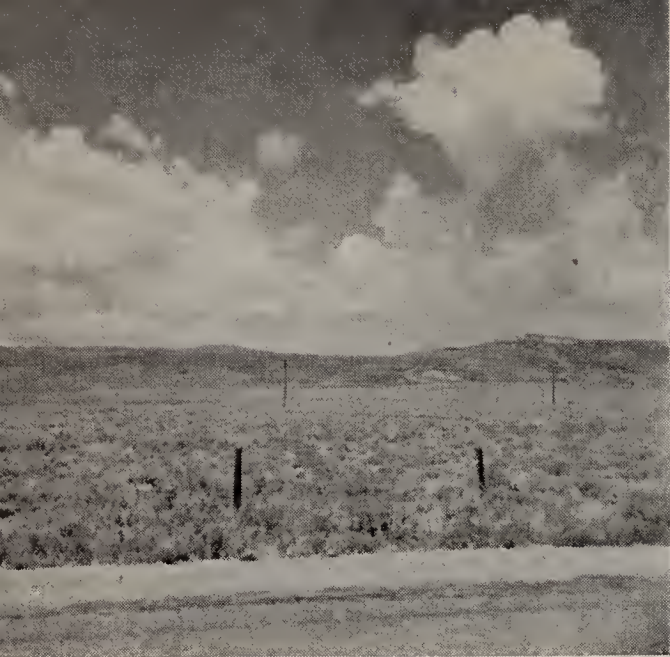
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COLORADO ROADSIDES

IN THE mountains of Colorado the roadsides have been landscaped by Nature, and wonderful many of them are. Here our main problem is to prevent these places from being destroyed or marred.



Over many of our main highways, especially in the east and west borders, we have many miles of level or rolling, almost barren country which is not particularly interesting in itself. Mile after mile of fence posts and telegraph poles are the only objects above the ground level to be seen. This aspect is certainly not very inviting to the thousands of visitors who come each year to enjoy this wonderful recreation state of ours. In all this plains and desert country, however, there is seldom a stretch of ten or twenty miles where there is not some small stream which gives water for a grove of cottonwood or willow trees. For little expense these little oases along the road could be purchased and established as roadside parks where citizens and visitors alike could stop and rest, or eat. Where else could this effort and expense be put that would bring in more good will and also actual dollars. The garden clubs have kept up the interest by promoting such things as the Blue Star Memorial Highway, but these efforts are as a drop in the bucket compared to the work needed.

GRASS CLIPPERS AND PROFANITY

M. WALTER PESMAN

MOWING the lawn isn't too unpleasant a task; it gives one the joy of accomplishment and is in the nature of a walk-a-thon against time. But then comes that infernal trimming with the grass clippers! It is even too tedious a job to admit of soul-relieving profanity.

Some young boys do it sitting down, ladies fighting *avoirduois* stoop over in what is far from a graceful posture, men with a background of the cowboy manage to hop along on their haunches, dragging a basket as they squat and hop.

Snip?snip! Off come three blades of grass; then a pull, and a bunch of weeds comes out. At the steps it requires a dexterous twist of the clippers to cut those persistent August grasses and keep them from going to seed. Along the shrub border and the flower border, after each cutting, the grass edges in a little closer and a decision is to be made: to clip or not to clip, whether it is easier on the mind to suffer the encroachment of the grass or to take spade against it and by opposing end it? (At least for a week or two.)

In order to avoid utter frustration in gardening let me pass on a few hints that will reduce grass clippers and possible profanity—or boredom—to a minimum.

Simplicity in design will help much. Every tree or shrub, planted in an open lawn means so much more edging, every bay increases the length; every walk invites untidy separation of lawn and cement.

Where lawn and other planting do join, a definite line of demarcation is indicated. Grass roots in shrubs or plants are an eternal drain upon maintenance funds and maintenance

patience. Clean cultivation among shrubs looks neat, and is good gardening. Sometimes even cultivation can be reduced by a good, clean mulch, such as peatmoss, or even short grass clippings.

Metal strips separating grass from border can be installed and are a great help in keeping the line just where it is wanted, instead of four inches beyond its original location.

Carefully placed stepping stones make it possible to mow over them instead of having to trim around them. After about four or five years, however, they may need to be raised up to the new level of the lawn.

Along walks and curbs a neat little edger will avoid the use of grass clippers, if the lawnmower cannot do a good job.

Incidentally, when and where clipping is unavoidable, at least you can save your temper by having the best type of mechanical clipper; the old-fashioned relative of lamb-shearing handclippers have nothing in their favor except sentiment. And sentiment does not help much in a question between live grass and dead gardening ambition!

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CHLOROSIS IN ROSES

F. B. WANN,

Utah Agricultural Experiment Station

Abstract of talk before American Rose Society, Salt Lake City, Utah, October 1, 1949

CHLOROSIS is the term used to designate the condition in plant leaves when the normal green color is replaced either wholly or in part by a yellow color. In many instances the chlorotic condition is characterized by more or less regular patterns of yellow distributed through the green color. These patterns may be of considerable aid in diagnosing the cause of the chlorosis.

A number of different factors may be responsible for the development of a chlorotic condition in plants. Basically, however, the destruction of the green leaf pigment, chlorophyll, is involved in practically all cases. The disappearance of the chlorophyll merely exposes the yellow color which is always present in leaves. Among the conditions which may induce chlorosis are certain environmental factors such as low temperature, excess moisture and particularly certain nutritional conditions of the plant. In this latter class are the mineral deficiency diseases caused by a lack of nitrogen, magnesium, sulfur, zinc, manganese or iron. In Utah and other western states the most important type of chlorosis is that caused by a disturbance in the iron nutrition.

Iron is used in the leaf in the production of chlorophyll. This pigment in turn is apparently used up in some of the food manufacturing processes which take place in the leaf so that new chlorophyll is always in demand if the leaf is to remain green. If the supply of iron in the leaf is too low, or if the iron present is in an inactive form, chlorophyll cannot be produced and the leaf becomes chlorotic.

Iron chlorosis is very generally as-

sociated with soils which are high in lime. The effects of such soils on the iron supply in the plant leaves appears to be twofold: first, the high lime content seems to make the iron in the soil less available to plants, probably by precipitating it from the soil solution. Second, plants growing in high-lime soils are unable to maintain the iron in the leaves in an active condition. Either or both of these effects results in the failure of chlorophyll production and chlorosis.

Attempts to control iron chlorosis have included among others the following practices: 1. Treatment of the soil by acid forming substances in an effort to counteract the effects of the lime. 2. Artificial increase in the iron supply in the plant by spraying with iron solutions or by injecting iron salts into the trunks of woody plants. 3. Grafting susceptible plants on chlorosis resistant root stocks.

Soil treatments in Utah have not been very promising. Favorable responses to acid forming chemicals have been produced only occasionally in orchard soils. The spray and injection treatments on the other hand have been very successful in bringing about recovery in chlorotic plants of all kinds. However, these effects are only temporary and must be repeated frequently. The use of chlorosis resistant rootstock appears to offer a permanent solution to the chlorosis problem in the case of grapes. In areas of severe chlorosis, however, even this method of control may not be completely successful. Many growers have suggested that Ragged Robin can be used as a chlorosis resistant stock for roses.



THINLEAF ALDER

ALNUS TENUIFOLIA

THIS large native shrub has not been used as much as it deserves. It is neat in appearance all throughout the year. The effect in winter is as shown in the accompanying picture. In early spring the new bloom catkins expand and become beautiful pink tassels.

This shrub grows naturally along the streams in the lower mountains, in association with the native Birch and Willows. It is a large shrub and should only be planted where it has room to develop. It can also be trimmed to make a single-stemmed tree.

YOU CAN HELP GET STATE PARKS

The Roadside Improvement and State Parks committee of this Association have prepared legislation suitable for setting up a system of state parks in this state. This will be presented at the next legislature. Now is the time for each of you who think that Colorado should have state parks to contact your legislators both present and prospective. Read page 22 in the September Green Thumb and also the July, August and October issues of 1948.



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BOOK REVIEW

By M. WALTER PESMAN

"*Colorado Ferns*," by H. D. Harrington and L. W. Durrell, Published by Colorado Agricultural Research Foundation at Colorado Agricultural and Mechanical College, Fort Collins, Colo. 1950. \$1.00.

Gradually Colorado is coming into its own in having both attractive and scientific plant information available. In the past anybody willing and able to dig out scientific data in austere floras and musty herbariums could, it is true, acquaint himself with our local ferns. But it was far from easy.

Now we have, in "*Colorado Ferns*," a comprehensive and pictorial account of ferns and fern allies. It has very complete descriptions, plant locations, and, best of all, pen drawings that make it possible for plant lovers to become familiar with a group of plants that has, thus far, kept too many people at a distance, since they were thought to be "all alike and im-

possible to tell apart, not having flowers." A total of 63 species and varieties (or subspecies) of Pteridophytes are listed.

The authors warn not to try and match plants with the drawings without the aid of keys and descriptions; all the same, what a relief it is to the amateur to be able to tell at a glance what a Selaginella, a Quillwort, or a Clubmoss look like and how, in general, the Moonworts (*Botrychium*) differ from the regular Ferns (*Polypodiaceae*). Try to get this basic information out of the older botany keys, which dare you to decide whether the vernation is, or is not, spirally coiled, and whether the sporangia are leathery and ringless, or membranous, provided with a ring.

What I particularly like is the matter-of-fact combination of everyday distinguishing marks with a frank use of botanical terms where they are needed for adequate descriptions. Locations are indicated in straightforward manner, sometimes drawing attention to the scarcity of collected specimens, sometimes indicating possible mistakes. The reader feels as if the authors take him in their confidence rather than lording it over him in an aloof manner.

All in all, here is a ninety-page booklet that endears itself immediately to plant lovers and that, I am sure, will be a reliable guide for botanists for a long period to come.

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SURE, you are the one I am talking to. What is for you? This magazine, the library at Horticulture House, the help in your garden problems that the Association offers, the work that is continually done to make a better state in which to live. It's all for you. No one person or group has any profit or glory to collect. Those of us who work around Horticulture House are at your command to do the things that you most want and need.

What can you do to get more benefit from the resources of this association? You can tell us what kind of articles you would most appreciate in the Green Thumb. You can tell us what kind of indoor and outdoor affairs you would like. You can tell us what other activities we might attempt to benefit you more.

And, so long as this is YOUR association you can give definite assistance to it by persuading some merchant that they could profitably advertise in the Green Thumb and reach all the good gardeners in the area. You could get some one that you know to write an interesting story for the Green Thumb. And, above all, you could tell your neighbors about what the Colorado Forestry and Horticulture Association is doing and get them to join so that they might also benefit themselves and help others through its activities. Will you help yourself? It's a good idea, isn't it, but **DO IT NOW**.

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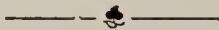
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WHEN THE IRRESISTIBLE FORCE MEETS THE IMMOVABLE OBJECT

WHEN I was a young fellow I studied over this problem frequently. The accompanying picture shows what happened in one case over a period of probably a couple of hundred years. The tree shown here probably started from a seed which grew and flourished in the protection of the large rock. Each year as it added its annual ring of growth it crowded closer and closer to the rock. It could not move the rock so it continued to grow around it.

In this case the rock will probably be here long after the tree is gone, but with a lesser rock the tree might have penetrated small cracks with its roots and actually broken it apart.



BOOK REVIEW

LANDSCAPE WITH SHRUBS AND FLOWERING TREES

By MARY DEPUTY LAMSON

For over twenty-five years the author of this book has been building gardens. Mary Lamson is one of America's finest landscape architects with a wide familiarity in creating beauty in a garden with little else than shrubs.

We are beginning to realize the fact that a lot of flower beds does not necessarily make a garden and we have also discovered that even a collection of very beautiful specimens of trees may possibly detract from rather than beautify our grounds. We are far too likely to regard the house and its grounds as being two separate and unrelated problems, hiring one expert to design the house and an-

other to lay out the grounds, without any harmony between the two.

This book is written for the owners of small gardens,—a special guide to the decoration of a small place—you know the kind that is springing up all over America. What a break these people will have if they just get hold of this book. Gardeners continue to exercise their own judgment in gardening as they do in architecture and in decoration with the same fatal results. There is no denying that people with native good taste can plant a garden in the country which may look well for a while or for some seasons but a very technical knowledge of flowers and shrubs is needed if the place is to keep on improving with time. Would you want a carpenter to build your house who simply knows good material? How many gardeners know little of the seasons of flowering or the exact varieties of plants which will yield most profusely or for the longest time? So often we find a place fairly beautiful in the spring, a few blooms in summer and entirely barren in the fall. This book will help us correct these and other faults if we feel we cannot employ an architect. I cannot understand why members of the architectural profession, talented, brilliant and able as they are do not find the general recognition of the necessity of their services in the building of gardens.

If you do not have the room, the desire nor the budget to have hundreds of bulbs in the spring, making color groupings with shrubs can give you almost the same enjoyment. We all know that bulbs alone, except in tremendous quantities are not important enough to make much of a picture but intensified by the bloom of shrubs we may have one of the high spots of the garden year.

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GARDEN WORK IN NOVEMBER

WATER. There is little danger now of inducing soft growth by watering, and it is very important that all plants go into winter with moist soil around their roots. A **THOROUGH** soaking now may hold them until spring, but if the weather continues open and there is bright sunshine for several weeks there may be need of additional watering for the more shallow rooted plants. Soak things until the soil is wet to their farthest roots. This may be 8 inches for lawns, 15 inches for perennials, 3 feet for shrubs or 6 feet for trees, depending on soil conditions and variety of plants. The only way that you can be sure that the soil is wet is to prospect in a few places and see.

TRIM. Any work necessary on trees can be done now. With leaves off it is a little easier to work in trees. Many tree men prefer to leave the work on maples, birch and walnut until they are in leaf, as they may bleed a little when cuts are made during their dormant period.

Irregular stems may be trimmed up on the shrubs, but the bulk of trimming on shrubs should be done just after they bloom so that the blooming wood for the next year is not removed. Hedges should have a final haircut and lawn edges may have a trimming to hold them until spring.

CLEAN UP. Even though the daily routine of water, cultivate, spray and weed is over, a garden may be kept attractive by just a little neatness. Keep the dead perennial stems cut off, the waste paper from the neighbors picked up and the excess leaves disposed of. In this effort for neatness do not go to the extreme that some are inclined to do and try to keep every leaf off the lawn. Some stems and leaves blown around the perennials will help to protect them from extremes of weather. Save all the excess leaves and stems for the compost heap. Our greatest need in Colorado is for more humus in the soil.

REPAIR. This "in between" time is just right for those repair jobs that you could never find time for when the routine of garden chores took every spare minute. The fence may need paint, the walk may need leveling up, the sunken spot in the lawn may need raising or the gate latch need adjusting. These warm sunny days are just the time to do it.

CONSTRUCT. You have long envied your neighbor's outdoor fireplace, platform or rock garden. You have thought that sometime you would build a trellis against that bare garage wall or fix a little ornamental fountain in the far corner of the garden. Now is the time to do the work on those inanimate things. Look around in the really nice gardens and see how great a part is played by the architectural features. Flowers make a short splurge in summer, leaves decorate the plants for a still longer period, but a garden may be interesting and beautiful all the year through if the design and inanimate features are well planned.

STUDY. Then as the occasional "bad" days come along in the fall and winter it is a good time to decide on some phase of gardening that you would like to know more about. Gardening opens up such a vast field of allied arts and sciences. You would like to know more about the associations of plants and insects, more about how fertilizers work, more about the why of plant growth, more about historic gardens or how to lay out a good garden. Let us help you lay out a course of reading that will give you more pleasure in your garden next year.



MEN AND MOUNTAINS

Excerpts from "Of Men and Mountains"

By WILLIAM O. DOUGLAS

MOUNTAINS have a decent influence on men. I have never met along the trails of the high mountains a mean man, a man who would cheat and steal. Certainly most men who are raised there or who work there are as wholesome as the mountains themselves. Those who explore them on foot or horseback usually are open, friendly men.

When man ventures into the wilderness, climbs the ridges, and sleeps in the forest, he comes in close communion with his Creator. When man pits himself again the mountain, he taps inner springs of his strength. He comes to know himself. He becomes meek and humble before the Lord that made heaven and earth. For he realizes how small a part of the universe he actually is, how great are the forces that oppose him.

If man could only get to know the mountains better, and let them become a part of him, he would lose much of his aggression. The struggle of man against man produces jealousy, deceit, frustration, bitterness, hate. The struggle of man against the mountains is different. Man then bows before Something that is bigger than he. When he does that, he finds serenity and humility, and dignity, too "

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The Green Thumb

DECEMBER, 1950



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The Green Thumb

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DECEMBER, 1950

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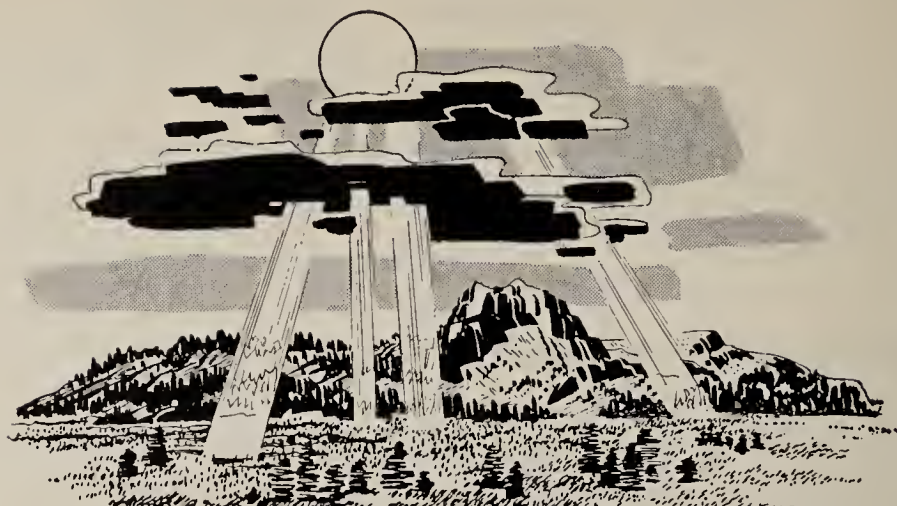
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DECEMBER SCHEDULE

Dec. 10, Sun. Meet at Horticulture House, 8:30 A.M. Trip to photograph the Big Horn Sheep in the Tarryall Mountains. About 150 miles by car over good roads. Some scrambling in the rocks to see the sheep. You must register by Friday.

Dec. 31, Sunday, and Jan. 1, Monday. Overnight on Devil's Head. End the old year and start the new out among the trees and peaks. Watch the fireworks on Pikes Peak at midnight from Devil's Head Lookout. Leave Horticulture House 2 P.M., Sunday. Home Monday A.M. You must register several days in advance so that food and transportation can be arranged.

CHRISTMAS DECORATIONS

Who needs some new ideas for Christmas decorations this year? On Thursday morning, December 7th, at ten o'clock, you can find them at Horticulture House, for that is the time when Mrs. Edward Mixa will demonstrate all sorts of clever ways to decorate inside the house for Christmas. The program has been planned early in the month to give everyone plenty of time to try Mrs. Mixa's suggestions for themselves, and the time has been set for *morning* to make it possible for many to be on hand.

More Plant Definitions

Broadcast—to scatter seed, rather than to sow it in rows or drills.

Casein—a substance contained in milk, which, when added to sprays and dusts, add to their adhesive and spreading qualities.

Heaving—the forcing of plants out of the soil, produced by alternate thawing and freezing during the winter. At times, roots may be left exposed, which may prove injurious, if they are not pressed back into the soil. Making the soil porous and light will often prevent this injury. A mulch is a great help also.

pH—a term which represents the hydrogen ion concentration by which soil acidity is measured by scientists. The pH acidity scale measures from 1 (acid) to 14 (alkaline) with 7 as neutral.

Scabrous—rough or gritty to the touch as leaves.

Stratification—an artificial way of producing nature's method of preparing seeds for sprouting. Some seeds need a longer period of storage than others before germination will take place, and this is usually done by placing them between layers of peat-moss, soil or similar materials which are kept moist to keep from drying out. Stratification is usually done in the winter so that the action of the frost will assist in splitting hard-shelled seeds.

H. F.

DOES THE "ORGANIC MOVEMENT" HAVE A "LOT OF TRUTH AND A LITTLE FANATICISM"?

By GEORGE W. KELLY

Read These Statements and Decide

I NOTICED a few days ago in an advertisement of the Organic Gardening Magazine that they have 95,000 readers. This would indicate that a great many people see something worthwhile in this system of soil improvement.

As with so many other "movements" many of both the proponents and opponents have gone beyond the realm of scientific fact and have come to "believe" in certain things just because they want to do so.

There can be no controversy with the fact that most soils, especially Colorado soils, would be benefitted by having more humus in them. Just for that reason to go on and claim that "chemical" fertilizers "poison" the soil is something which seems difficult to prove. Without doubt there is much important fertilizing material which is destroyed in our "modern" systems of waste disposal which should be put back on the land, and we have much to learn about the comparative value of crops grown on soil containing all the necessary elements and those grown on soil which has, for any reason, deficiencies.

In general, I should say, that the "Organic Cultists" do a great deal more good than harm, for they call to everyone's attention the importance of conserving our plant wastes. It makes us wonder sometimes if it is not necessary to add some fanatical things (like fishworms) to any bit of truth, and develop some hero to worship, if there is to be a great popular following. Our own Colorado

Forestry and Horticulture Association has tried to give out only established facts, with no fanaticism and no magnetic leaders to follow, and we struggle for a meager two thousand membership while the Organic gardening people collect close to a hundred thousand followers.

We give here extracts from one rather ardent believer on each side of the question and one who seems to sum up the controversy in a sensible way. Many of our members will remember R. Milton Carlton when he was in Denver. He is one of the leading horticultural scientists in the U. S., and his beliefs are largely the result of extensive experimentation. Reynolds Morse is the son of our long-time member and vice president, Mrs. George H. Garrey. He is also a scientific-minded man, but believes that he has hit on something important here. Walter Thomas is a professor at Pennsylvania State College and a recognized plant authority.

Read all of these opinions and then draw your own conclusions.

THE ORGANIC FRONT

By REYNOLDS MORSE

Dr. R. G. Gustavson once remarked in a Chemistry Class at the University of Denver that man could ape nature synthetically, but only in part. He pointed out that we could make synthetic maple sugar but it never tasted quite like the real thing. He said we could make synthetic rubber, but it never had the "bounce"

of the natural product. The flavor of maple syrup and the bounce of rubber are due to the inclusion by nature of impurities which we still cannot duplicate in a laboratory.

The new Organic Front which is gaining wide momentum in the east has as a premise a concept closely paralleling Dr. Gustavson's observation. Life is not composed of pure NPK (nitrogen, phosphorus and potassium), it is a vast bio-chemical complex so intricate, so involved, so dependent on "impurities" abhorrent to the "pure" scientist that life may well perish from the earth while the scientists are trying to analyze its myriad components.

The present Organic Movement has as its basis the need for a certain faith—faith that in the wastes of life and only in the wastes of life, not in chemical substitutes, are found the elements needed for future life.

This complex of elements is not found in the gardeners NPK, nor in the soluble chemical salts used in commercial fertilizer, nor can they be isolated scientifically with our present knowledge. As evidence of this a good organiculturist would look in his "bible," "An Agricultural Testament," by Sir Albert Howard, the "father" of the mulch-compost method of farming, and cite the case of the tea planters who found the flavor and production of their tea declining until they began to restore the soil with compost, cuttings and natural fertilizer.

Howard reasoned that nature would not now sport a single fruit tree or vegetable plant if the tons of poisonous chemicals we feel necessary as sprays and stimulants now had been available since time immemorial. Nature somehow brought life to the present day without poisonous sprays, without readily soluble and toxic

chemical salts which leave deadly insoluble residues in the soil.

That Howard's avenues of inquiry were right I do not believe we can deny. The California orange grove records show that the number of oranges per case has more than doubled, as fruit size has shrunk, under chemical fertilizers. Some of the Washington orchards are forbidden commercial outlets because the arsenic content of the fruit itself has reached toxic levels due to absorption of the spray poisons.

At any rate, Howard made inquiry for the first time into the one basic question on which terrestrial life depends—"How do all the some sixty-five elements necessary to human life become available to us in assimilable form?"

He disclosed the intense biological activity in the soil. He showed how soil bacteria digest the soil minerals and put them into soluble form. He showed the process whereby the minerals in soluble form were transferred to the plant roots by direct contact and by the mycorrhizal process, including some five hundred kinds of mold. He showed how the plants synthesized these minerals and proteins into a bio-chemical form from which our own digestive systems could abstract them.

He discovered that nature would permit a plant to grow in a pure chemical solution, but he also showed that such a plant had little or no nutritive value in sustaining human life in spite of its seeming perfection.

People reacted to these disclosures like the Naval officer who could not believe the atom bombed ship was still unsafe after they had washed it down. It looked all right, but it was not all right and he had never been taught to think beyond appearances.

In the case of the plant it was the

myriad impurities of a waste filled bacteria and humus rich soil on which in the final analysis, human health depends.

From 1946 to 1950 the organic movement began to take a definable shape. Some gardeners thought it a cure all—some laughed at it.

I question concepts advanced like stating that insects eat only unhealthy plants—nature's way of removing the unfit—and that organically fed plants need no sprays, being immune—not "tasting good" to the insects. While such concepts may be true they will prove bitter pills to many gardeners and spray manufacturers alike.

The basic movement, however, was predicated on restoring to the soil the humus, the bacteria and the organic materials found in the virgin soils which have nurtured human life up to its present stage.

A glance at my Life Insurance company's statement will show that we have pretty well licked contagious diseases. But degenerative diseases—heart trouble, kidney disease, cancer, are on the increase. The organical-

turists feel definitely and have actually begun to prove that these degenerative diseases can be licked too.

But how do the organiculturists propose to lick the plague of degenerative diseases that is now our big national killer? There are not many steps to the remedy—it is simple. But because it is simple it is hard to understand, difficult to explain and almost impossible to expound to a mind unable to realize that a perfect appearing fruit may, on spectroscopic and chemical analysis be no better for nurturing the life process than a mouthful of straw.

At any rate, the basic idea is to reverse the one way flow of organic materials to the urban areas. Each day millions of tons of bio-chemicals flow into a city, the edible parts are processed in millions of digestive tracts and then are forever disposed of by countless methods from incineration to dumping into the sea. The ideal is to return all this vital natural wealth to the earth from which it came. This ideal, however, may be decades away.

THE NON-ORGANIC FRONT

By R. MILTON CARLTON

The question before us today is not whether organic matter is good or bad. I am certain that everyone will agree as to its importance in the growing of plants. If I were planting a 40-foot oak today you can be sure that all the well-rotted manure or compost I could spare would be mixed with the soil, and there would be at least six inches of pure compost in the bottom of the hole.

I once had a compost heap I built with a bulldozer, fifty by fifty feet and eight feet high that I spread out on a hundred foot lot. Even today I

have a heap ten by twenty-five feet and four feet high. Into that pile goes all the organic matter I can scrape up, including the careless rabbits I shoot as they try to nibble my blueberries. If you want to give me a present, a load of manure is a lot more acceptable than most gifts. In short, I believe in the use of organic matter.

However, I want to talk about something that is spoiling the fun of gardening—something that is turning otherwise normal human beings into suspicious, frightened faddists who see

a death's head on every cabbage in the corner grocery store.

During the past decade we have seen in the United States the birth of a cult which holds as a fundamental tenet the theory that the continued use of chemicals as plant foods is dangerous, harmful, immoral, or all three. It further holds that the continued recommendation of such chemicals by recognized authorities is part of a secret plot by commercial firms to profit from the poisonings of men, women and children.

This cult further believes that all the needs of plants for the elements which support life can be met from natural organic wastes without sophistication of these natural fertilizers with chemicals.

I have gardened for over thirty years now. I do what every sensible, experienced farmer and gardener does. I make the best use I can of organic matter, I make constant use of commercial fertilizer in every possible way. It is the combination of the two that is the basis of all good produc-

tion of field crops, vegetables, flowers, and other ornamentals of today.

Much of the literature on organic gardening is filled with half truths and misleading statements. The one basic truth propounded by the organic gardening cult is the importance of organic matter. Its effect on soil aggregation and porosity, thereby improving the tilth and air-moisture relationships within the soil has long been noted. The addition of organic matter to the soil is now a standard agronomic practice.

The organic gardener implies that an element such as nitrogen or calcium when supplied in an inorganic form is different in its nutritional value than the element obtained from organic material. Such an interpretation can hardly be based on experimental evidence. In the same category are statements to the effect that plants grown under a system of organic gardening are more resistant to insects and diseases and that spray programs may be omitted where only organic materials are used.

COMPOSTS, MANURES, AND INORGANIC FERTILIZERS, THEIR FUNCTION, USE AND EFFECTS ON SOILS AND PLANTS

By WALTER THOMAS

Extracts from article printed in Mar. '48 Green Thumb.

The deduction from the facts presented is that organic manures and chemical fertilizers both have their uses; one supplements the other. Composts contain not only humus but some supplies of the fertility elements as well. In this sense they overlap the function of chemical fertilizers which lack the decomposable plant or animal constituents on which some of the most valuable properties of organic matter depend; accordingly, organic fertilizers cannot fulfill all

of the functions of compost material. But the "chemical" fertilizers have many advantages over organic manures. They can be easily applied at the most suitable time, and their great variety enables a selection of one or more nutrients to improve the balance. Moreover, they are in a readily available and concentrated form. These properties require knowledge and skill for the proper use of them.

On the other hand, composts have the advantage in that their use is

safe in inexperienced hands, for they are not too rapid in their action. Against this advantage must be placed the fact that their composition varies considerably with the residue employed, so that the nutrients in them may not always be well balanced. Organic manures, moreover, do not always contain all the essential nutrients, especially those elements required in very minute amounts—manganese, boron, zinc, copper, molybdenum, cobalt and possibly others. These elements are fairly uniformly distributed in rocks, but in some soils they are known to be either absent or unavailable to the plant. Where nature has omitted to provide in the rocks and soils sufficient amounts of all the major and trace elements, or if present originally they have been reduced by crops or leaching, applications of composts from material produced on such land will not remedy the deficit.

The inorganic or mineral fertilizers are referred to as “artificial” by the various humus schools. According to them, the only soil amendments that can properly be applied are the “natural” ones, meaning the products resulting from the decomposition of plants with or without the intervention of animals. The term “artificial” as applied when fertilizers were first introduced to distinguish them from farmyard manure. The designation is misleading, inasmuch as some of them are just as much products of nature and, therefore, are just as natural as farmyard manure—possibly more natural. Examples are the kainits and other potash salts mined from natural deposits in Europe and this country; Chilean saltpeter (nitrate of soda) from mines in South America; rock phosphate from deposits in this country and elsewhere, and finally guano—the excrement of

seafowls found mainly in islands off the coast of Peru.

There are castes too among the humus school. Condemning the use of fertilizers that are “chemical”, one group, nevertheless makes use of limestone, but objects to burnt (slaked) lime obtained from it. Some accept basic slag, a product of the steel industry, and also rock phosphate, but ban superphosphate obtained from the latter in which the phosphorus is in a more active form.

With respect to soil bacteria, there is no evidence that fertilizers results in injury. No significant difference in their number has been found in field plots without any fertilizers and in those which have been treated with fertilizers continuously over a period of years. The number of bacteria and other organisms can be greatly increased by the addition of organic matter; but there is no virtue in mere numbers for an increase in their number during the decomposition of organic matter high in carbohydrates and low in nitrogen may deprive the plants of its nutrients for, as we have seen, the food utilized by both is similar.

The composition of the crop is affected by soil amendments in whatever form they are supplied. The need is for a proper balance between the various nutrients to supply the requirements of the plant as well as the nutritional needs of the animal or human consumer. No sound experimental evidence exists that organic manures have any special value with respect to quality or that well-balanced fertilizers are detrimental. Foods raised under the same conditions on organic manures and on chemical fertilizers have been carefully compared without any nutritional differences being found in the basic food values.

HOW TO MAKE COMPOST

By REYNOLDS MORSE

MULCHING and composting are words I find very loosely used in the modern literature on organic gardening and farming. As a rule I assume a mulch to mean any organic material, from peat moss to corn cobs, used as a ground cover, and rotting in place. Compost appears to mean a pile, or heap, of organic material which is decomposed by bacterial action and put into form readily accessible to the soil bacteria.

Composting is an art in itself, but not a difficult one. It consists of building a pile of any organic material in layers with manure, earth for the bacteria, and a little powdered limestone.* The pile will heat and decompose rapidly. There is also a ritual of adding bacterial, or herbal, activators suggested by some adherents of the process.

And lately there has appeared a new concept in composting—activation by non-aerobic bacteria—a process coming from Italy, and quite unlike the Howard-Rodale process, which insists on ventilation of the pile by a center pipe of chicken wire and by turning the heap. In the non-ventilated pile, the pile is enclosed in a cement bin and sealed. The juice emanating is caught and saved.

Compost production is now on a commercial scale, and there are available special silos so compost, or artificial manure, can be readily made from organic wastes by any farmer.

I believe that if I described my own gardening methods, I could cover most of the features and claims of the organic method as a whole.

First, I maintain three compost piles where in I compost my chicken litter, chicken roost manure, all our

household garbage, egg shells, shop sawdust, grass trimmings, weeds, leaves, etc.

Since I do not have enough material to build a pile scientifically layer by layer, I build it the best I can, and when I add the litter and manure the pile heats nicely.

All garbage, weeds, etc., is put through a Keston Organic Shredder and this chopped material will “compost” in a fraction of the time required for unchopped and unmixed organic waste. About three weeks of summer weather is ample to make “artificial” manure by this method.

I maintain a four-foot finishing pile where I finish and store compost. The three starting piles are 6 by 6 by 6. The finishing pile is 4 by 4 by 4—such is the shrinkage in volume encountered in composting.

Since barn yard manure is no longer available, compost, or artificial manure must substitute and here is every evidence from the quality of organically grown produce that it does.

I use colloidal, or fine ground phosphate rock, fine ground granite dust, and fine ground limestone to make available to soil bacteria the unleached mineral elements found in nature.

It is no problem to stop the city leaf trucks and beg a few tons each fall, and these leaves that are then saved from the autumn fire I use as a ground mulch and for composting grapes, blueberries and raspberries.

Of recent months, a new suggestion has come from organic headquarters. It is true that a compost pile will lose certain juices. It is also true that the airless compost material requires special bins and that any established compost method is a great deal of work, a very great deal. So a new

* (With our western alkaline soils the addition of lime is not necessary or desirable. Ed.)

method called sheet composting is being advocated by the periodicals *Organic Gardening* and *Organic Farming* published at Emmaus, Pa.

This simply consists of spreading the organic matter and grading or discing it in to rot in place. I feel this is a definite compliment to Faulkner who advocated it several years ago in *Plowman's Folly*, and who has been responsible for almost as much discomfiture in the ranks of the chemical agriculturists as Rodale himself with his own theory of sheet composting and discing as opposed to deep plowing.

Garbage and home waste must, of course, still be pile composted and I have found that grinding speeds the composting process materially.

At present a method is being worked out to compost organic material in large controlled digesters. A pilot plant is being operated in Chicago, and mechanical difficulties are the only insoluble problem to date. The compost, known as Freyer Compost, is a nice rich brown earthy material, bacteria rich, and ready to replace in the soil some of the wealth we are taking out, whether in flowers, vegetables or fruit.

Whatever the future of the Organic Movement, I believe it represents a problem of immediate national interest. Degenerative diseases must now be combated with the same effort that we have met contagious diseases. The answer to pneumonia, mastoid, etc., lay in a soil bacteria. I feel sure, too, that the answer to heart disease, infantile paralysis and cancer itself will be found in the soil. After all, the truly rabid of the Organic Cult regard insects pests—since they mostly attack only sick plants—as nature's way of weeding out the unfit, and since they seem to be right in the basis of all empirical tests of or-

ganic method to date, it will not be surprising to find that cancer and heart disease were nature's same method operating on the human level, and that the only way to combat such scourges is by returning to the soil all the myriad of "impurities" on which life depends.

I feel sure that this action must be taken long before science has isolated all the vitamins and hormones and the other trace substance by which threads we so precariously cling to life.

The Organic Front is worthy of all gardeners' support for that reason if for no other, because too few people face to face with the atom bomb, are concerning themselves with the survival of tomorrow's children.

THE SPIRIT OF THE MOUNTAINS

When man knows how to live dangerously he is not afraid to die. When he is not afraid to die, he is, strangely, free to live. . . . There are many ways to learn how to live dangerously. Men of the plains have had the experience in the trackless blizzards that sweep in from the north. Those who go out in boats from Gloucester have known it in another form. The mountains can be reached in all seasons. They offer a fighting challenge to heart, soul, and mind, both in summer and winter. If throughout time the youth of the nation accept the challenge the mountains offer, they will help keep alive in our people the spirit of adventure. That spirit is a measure of the vitality of both nations and man. A people who climb the ridges and sleep under the stars in high mountain meadows, who enter the forest and scale the peaks, who explore glaciers and walk ridges buried deep in snow—these people

will give their country some of the indomitable spirit of the mountains.

Copyright, 1950
from "Of Men and Mountains" by
William O. Douglas, Harper Brothers,
New York

Have You Ever Seen Grass Being Seeded With a Fire Hose?

No kidding! A company at Elmsford, New York, has developed a technique of seeding grass along roadsides and in parks by spraying a mixture of water, seed and fertilizer on the seed bed. A 600-gallon tank mounted on a truck is loaded with a solution containing 300 pounds of grass seed and 600 pounds of commercial fertilizer. Mechanical agitation keeps the material in suspension. A pump forces the solution through a fire hose. A tankful per acre is applied. Someday we may see their unique system adopted for seeding down new pastures or re-seeding range-land.—From a Dupont Bulletin.

COMPOST

Compost may be made in pits, piles or pens depending on the space and material available. The two pictures above show the extensive piles, pits and pens used by C. L. Dunlap, of 1105 Garrison, Lakewood, Colo. Mr. Dunlap gardens about an acre and has had a wonderful improvement in the vigor of his flowers and vegetables since using compost.

The lower picture shows the almost hidden compost pen of Mrs. E. R. Kalmbach at 2654 Forest, Denver. This pen adjoins the neighbor's fence, yet is never offensive to them. It is almost completely hidden by shrubs in summer and furnishes all the compost needed for Mrs. Kalmbach's small garden.

Are You Really Interested in the Welfare of Your Gardens? Patronize the Advertisers in The Green Thumb.



THE ASTER PARADE

By MARGARET ASHLEY

THE parade of Fall Asters is a thing of thrilling beauty with its masses of gay color. I think they may well be called the jewels of the garden—as the many brilliant buds on the mounds of green make one think of jewels. Please stop and become acquainted with them, their good will is contagious and you shall love them.

I don't know of a more agreeable garden companion and for so many reasons. Asters will come through a late spring freeze unhurt and they stand hail storms well. Besides this they compliment almost any plant next to them. A tiny multiflora-flowered yellow August Hemerocallis nodding over a dwarf Beechwood Challenger aster with a mound of dark blue forget-me-nots near is lovely indeed. Or tall asters planted behind medium and dwarf ones make a beautiful display. They are such fun as you can do anything you wish with them.

You can have any height plant you like. I do not shear the tall ones at all, but let them get their maximum height. For the medium ones I shear just a little to keep them well within bounds. I shear the dwarf varieties back very hard—half way—for nice, low mounds of color.

On the dwarf asters put no fertilizer, only a mulch of sheep and peat in late fall. On the rest, early in the spring, put well rotted cow manure over them and dig it in around plants. Then when they are heavy with buds about three weeks before blooming, fertilize again by digging in quick complete fertilizer and some sheep and peat. This makes larger flowers and helps the plant complete its work. In late fall cut all plants

back to the ground and mulch with sheep and peat or well rotted cow manure.

Good spacing arrangement is most important for asters. They must have air circulating freely around them. Plant in full sun and give plenty of moisture at all times. Never water so that the leaves of the plant become wet. It is rare that a plant treated in this way would ever have mildew or red spider. If you should have trouble with these pests, a good dusting of sulphur will keep them in check.

Early in May we are greeted by the low rock garden blue aster—*Alpinus*. It has a white flowered form, *Alpinus albus*. This aster does not like to be moved around. The beautiful large flowered *Goliath*, a bluish-purple, is next to bloom. It is six inches tall and grows in rosettes. It is a hybrid.

Aster Frikarti, Wonder of Staffa, is a *must* for every garden. It starts blooming the first of July and is still blooming in October. It will stand heavy white frosts. A loosely branched plant, it is about 2½ feet tall and should never be sheared back. I feel too that this is another aster that should not be moved or divided. It is a charming cut flower and stays open at night. An arrangement of blue *Frikarti* and pink *Radiance* mums are delightful together.

Victor is a dwarf light blue. I always shear these so that they are low mounds of blue with yellow centers. The flowers and petals are round.

Ronald, another dwarf plant, is completely covered with lilac-pink, large flowers. The petals are not close together.

Snow Sprite is a lovely branching dwarf, and has pure white flowers with yellow centers. It blooms the last of August and is a bright, gay addition.

Constance, a dwarf shell pink is later blooming and comes in October.

The new dwarf Oregon asters are the result of crossing the tall garden asters with Oregon species. They bloom by the middle of August. I have one, *Pacific Amaranth*, which I do not shear and it has come for two years now at around 15 inches tall. It is interesting as there are flowers with yellow centers as well as some with dark red-purple tufted centers on the same plant at the same time. It is lovely by the dwarf mum *Cody* which is a bluish rose. Other Oregon asters are *Purple Feather*, *Oregon Snow-bank* and *Pacific Horizon*. I can't begin to give you the beauty of these different asters as each has its own charms, and all have good foliage.

Princess Margaret, about 20 inches tall, has come the same height for two years and is a soft rose with brilliant pink buds.

Skylark, a sky blue with yellow centers, has cup-shaped flowers with thick petals which don't seem to grow in rows at all; they just look stuck in every which-way. It is tall and lovely by *Harrington's Pink*.

A few other good tall asters are: *Mt. Everest*, white; *Survivor*, which is rose (but I like *Harrington's Pink* better); *Blue Gown* and *Blue Gem*, rich blue, wide open flowers. While these will grow from 3½ to 5 feet tall, I keep them sheared so they are 12 inches tall in bloom.

The red *Beechwood Challenger* can be used for tall, medium and dwarf plants by shearing. I don't believe you can find a better red.

The new English Giant-flowering

asters are real perennial treasures. *Plenty*, a lovely soft blue, is magnificent. It grows 3½ to 4 feet tall and the flowers are two inches across. They are semi-double with tufted centers and make a delightful cut flower as they stay open at night. *Peace*, a companion for *Plenty*, is a pinkish-lavender. There is enough difference in the flower formation of these two to make them interesting together. *Prosperity* is a pink. *Peace* and *Plenty* planted behind *Princess Margaret* was an outstanding spot in the garden.

Asters provide another joy in the garden for they bring a parade of bees, too. I never knew the garden could be visited by so many bees at one time, all sizes and shapes, giving their last concert of the season.

All in all, asters are a *must* in the garden as you can plant them all through the perennial border—among mums, *hemerocallis*, *Shasta* daisies or any of the border plants. If you will plant them, you'll have mounds of color adding glories to the garden throughout the season.

GARDEN WORK

JULIA JANE SILVERSTEIN.
Green Thumb Radio Program,
Oct. 28, 1950

The garden can be designed for a minimum of maintenance, but I'll warn you—there is nothing static about a garden! If you have growing things one cannot just let them go; they will need water, food and care. The bugs will enjoy them, too, so you have to help the plants combat the harmful insects.

But why do we have gardens? Because it is fun having them make proper demands on one's time and interest. A garden is a stimulating recreation! If you aren't willing to do *some* work (I call it play) for the joy of a garden, better move to an apartment.



CHRISTMAS SHOULD BE BEAUTIFUL

By GEORGE W. KELLY

THE picture on the opposite page is NOT beautiful. It is not supposed to be beautiful, but it is an actual photograph taken a year ago along highway 40 west of Denver. It shows one of hundreds of trees stripped for Christmas greens. It indicates what our beautiful highway sides may all look like if we do not adopt some more effective method of protecting them.

The idea of using native greens at Christmas time is good—it is fundamental—we would like to encourage it. But, when supplying this beauty for the city dwellers, at this holiday season, causes the the beauty of our hillsides and mountains to be destroyed it is possible that the damage done may be greater than the benefits.

We believe that it is possible to have both with proper regulation. The state forester has certain very limited controls over the proper cutting of Christmas greens. As the easily gotten-to material is used there is greater and greater danger of abuses. He needs much more effective authority to demand good forestry practices in the cutting of Christmas greens. With good forestry practices many mountain slopes will supply greens for an indefinite period with little dam-

age to the soil or the beauty of the forests.

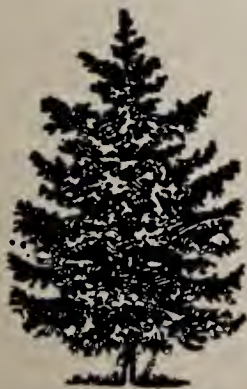
We must establish buffer strips along our highways so that the beauty and naturalness may be preserved regardless of what may be done to the adjoining private lands by careless or greedy owners.

With proper control it is not necessary to destroy the permanent beauty of our mountains to create the temporary beauty of our cities for the holiday season. This should be the concern of every citizen.

Question: I have a place in my garden where soil is poor. Are there any annuals that will grow there?

—A Gardener in Longmont, Colo.

Answer: Yes. *Amaranthus caudatus* (Love-Lies-Bleeding) *Dimorphotheca* (Cape Marigold) *Dwarf Nasturtiums*, *Portulaca*, *Annual Pinks*, *Sweet Alyssum*, *Balsam*, and *Calliopsis*. In the same letter was the question—Must all annuals be raised in flats and transplanted—No. The seed of the following plants may be sown in the open ground where plants are to grow. Sow early *Alyssum*, *California Poppy*, *Candytuft*, *Cornflower*, *Forget-me-nots*, *Mignoette*, *Nemophila*, *Drummond's Phlox*, *Sunflower*.

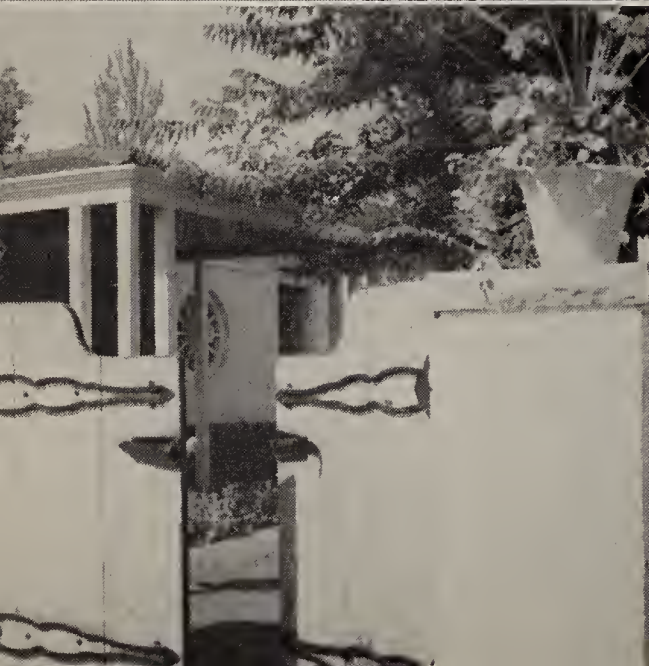


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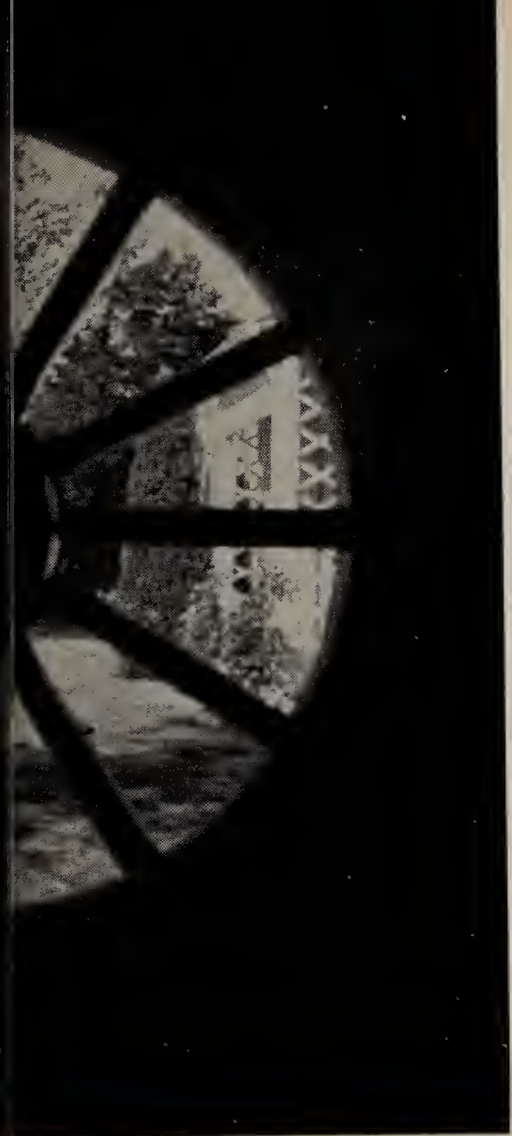


A GARDEN OF

By

A CURVED path is like the p of a hill; it invites you to look over and round the corner. The p in the front yard of Mr. Ferret's house, with a fine wrought iron lantern standing as a signpost, curves invitingly, and leads the curious gardener to a heavy pine wood gate with handsome lock and hinges. These are not only the key to the rest of the garden, but also to its chief characteristic—the care with which each feature has been planned down to the last detail.

The gate, let into a brick pillar, opens on to an attractive garden lawn, bordered on the far side by



NE FEATURES

ARY

retaining wall of local flag stone, planted with low perennials and backed by an evergreen hedge.

At one end of this garden there is an attractive summerhouse. Here two wooden tubs flank the entrance. They are not the usual heavy-to-move tubs, but are fitted with miniature wheels and handles so that they can be moved easily at will.

Two old wooden wheels are set into the sheltering walls of this summerhouse, so that they serve as windows. They are twelve-spoked wheels, a new one for each month of the year, through which to look out on the changing garden seasons.



A LIVING FOSSIL

From Shade Tree Digest as presented by the Swingle Tree Surgery Company

THE young tree pictured here is a living fossil, a Dawn Redwood, or if you prefer the scientific name, a *Metasequoia glyptostroboides*. A species long believed to be extinct, though known to paleobotanists through fossil remains, a few living, mature *Metasequoias* were found in 1941 in Szechuan province of central China. After the laborious and time-consuming process of positive identification had been completed, seeds were collected, a quantity brought to the United States, and planted. This tree developed from one of those seeds.

In 1941, Professor T. Kan of the Department of Forestry of the National Central University (China) saw on a roadside in Szechuan province, a large tree which the natives called *Shui-sa* or water fir. His interest aroused, Professor Kan was instrumental in having herbarium specimens collected which led to a thorough search and, finally, positive identification of the species. In later expeditions approximately 1000 *Metasequoias*, large and small trees, were found, all confined to a relatively small area. It was learned that the natives were still cutting the trees for interior finishing purposes, and fearing extinction of the species, a committee was formed with the objective of perpetuating this "living fossil." The discovery of living *Metasequoias* has been classed as the "most remarkable botanical discovery of the century."

Although apparently rather closely related to the redwoods of California, the *Metasequoias* are of much more ancient origin; fossil remains have been found that indicate the species lived over wide areas in North Amer-

ica and Asia some twenty million years ago. In appearance and habit, *Metasequoias* are somewhat similar to the Baldcypress of the South; they bear cones and shed their leaves each Fall. At maturity they reach about 100 feet in height and 6 feet in diameter according to measurements taken of specimens in China; the largest found there was approximately 114 feet tall and just under 7 feet in diameter at breast height.

Robert E. (Evergreen) More will be able to report on the *Metasequoia's* liking for Colorado conditions a few years hence. He has a small plant at his arboretum at Buffalo Park, and two in Denver. The Buffalo Park tree has no protection at all and will experience rigorous conditions indeed. One Denver tree has been planted in a semi-protected location, and the other in a lath house. All have done well since April—when they were first set out, and have gone into leafless dormancy. It will be interesting to hear what they do during the trying late winter and spring seasons.



WHY GARDENS DIFFER

By M. WALTER PESMAN

"Do You Call *That* a Garden?"

WE WERE looking at a picture of a modernistic garden on the Riviera in France. It showed a series of different levels, built in cement, with flowers interspersed here and there. The high point was crowned by a statue of what seemed a human figure.

It was a garden, done by a famous French designer.

The same question is raised about certain Italian gardens—of undoubted fame—which show dozens of fountains, and marble features but not a single petunia or zinnia.

"How do American gardens differ from English gardens?" The query bothered Miss Joan Parry, of Stoke-Poges, and she decided to go and see for herself. She found outstanding gardens in Colorado, where she had been told no gardens could be expected.

And so the problem becomes more complicated the more we find out about gardens in other countries and in former periods. There are the hanging gardens of Babylon, the floating gardens of Mexico, the hunting estates of Assyrian kings, the parterre gardens of Versailles, the cottage gardens of England, the rock-and-water gardens of Japan.

And there is our modern garden of the ranch house type.

It isn't too confusing if we do a little sober thinking about this. Gardens, like people, are different. They will be different. They will change as people's ideas change, as conditions change. On the other hand, similar conditions cause similar gardens.

Here are the three big factors involved:

1. *Physical Environment*, such as climate, topography, kind of soil, water supply, and the availability of plant material. It stands to reason that a garden with palmtrees and oleanders looks different from one with conifers and Iceland poppies. Even such a minor thing as the acidity of the soil limits or encourages certain plants or plant types.

2. *Character of People* in regard to nationality, tradition, taste, social conditions. The Japanese developed an enclosed naturalistic rock garden in keeping with their general art feeling. The English cottage garden reflects their love of flowers. Italian gardens have a tradition of the use of water and of clever visual balance.

3. *Function or purpose*. King Louis XIV of France was interested, before all, in impressing others with the magnificence of the Gardens of Versailles. He entertained lavishly and the gardens had to have broad roads, impressive fountains, spectacular statues. Compare that with the double-purpose Colonial garden; here vegetables, fruit and flowers were important.

Now, where do we go from here? What can we expect of the American garden? Is there such a thing as "the American garden"? Perhaps we are developing a common function or purpose as a people. Even then there will be many variations.

Variations are particularly to be expected in consequence of our different physical environment. Not only are plants different north and south, east and west—but so are the people.

Only the future will tell whether folks in the year 2500 will say of our efforts: "Do you call *that* a garden?"



FOR CHILDREN OF 8 TO 80

LIFE OUT OF DEATH

Here are several examples of the persistence of Nature. This is a rather dramatic example of the continuous process of life coming from death. The small spruce trees growing in the stumps were probably 20 years old. It is a question whether or not they will send roots down through the stump into solid soil before the stump entirely decays and falls away.

The spruce growing in the dirt roof of the old miner's cabin must be at least 35 years old and in quite vigorous health. What happens when the roof collapses is any one's guess.

THIS YEAR'S AUCTION ANOTHER SUCCESS

The weather man was on our side for the Plant Auction this year, held on Saturday afternoon, October 21st.

The City Officials kindly consented again to let us use the Greek Theatre of Civic Center for the sale. John Swingle and George Amidon were our first-class auctioneers and volunteers including Clair Robinson, Earl Sinnamon, Mrs. A. L. Barbour, Mrs. E. O. Cook, Mrs. J. Swingle, Mrs. Paul Hastings and many others helped in collecting material, handling goods and other details of the sale. A net profit of very nearly \$600.00 was realized for the Association and this amount will help substantially in meeting our deficit for the year.

Everyone was most cooperative in this endeavor and we hope now that we can make this an annual event.

Following is a list of the donors without whom this sale would never have been possible.

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GOLDENRAINTREE

Koelreuteria paniculata

Also called Varnishtree, Chinatree and Pride-of-India.

This is a borderline tree in hardiness. In protected places it does well but in open exposures will frequently winter-kill partly or entirely back. It is well worth a little extra care as it gives a grand display of flowers in summer and the large seed pods are ornamental all winter.

The flowers are small but in a large loose cluster. They are yellow with a small red eye which makes them interesting. The pods are triangular, a golden brown and contain three jet black seeds about the size of peas. The leaves are compound, about the size of sumac but interestingly notched.

In growth it makes a small broad-headed tree adapted for use as specimens or for parking planting.



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POISONOUS PLANTS FASCINATE

Book Review by M. Walter Pesman

POISONOUS and Injurious Plants in Colorado, by L. W. Durrell, Reu Jensen and Bruno Klinger, Published by Colorado A and M. College, Fort Collins, Colo. Bul. 412-A; May-1950. Gratis.

The very attractive cover of this revised earlier bulletin on Poisonous and Injurious Plants is indicative of the material inside. Once you leaf through it you find all sorts of interesting and valuable material and you are fascinated by the large number of plants which may do injury to livestock, and sometimes to man.


Comparing this new edition with the old bulletin 455, issued September 1939, a few things are apparent.

First of all, it is pleasant to observe that a number of plants are dropped that used to be considered culprits: evidently they are on good behavior and are not now thought guilty. Such are for instance, Arnica, Croton, and Blazing Star. Even their pictures are dropped from the "rogues gallery." Buckbean is also exonerated.

On the other hand Copperweed is added, *Oxytenia acerosa*, a good-looking, fragrant relative of the ragweeds, occurring along the Gunnison and Colorado River, with light yellow blossom plumes.

We are glad to find more information on the fight against "scum" algae in ponds and pools, and to have it pointed out that the weedy Poison Hemlock, so very common now in our region west of Denver, —and even in Denver gardens,—may well be confused with Angelica and Sium. Another interesting bit of information is about the recognition of selenium by the sulphurous smell on crushing leaves of such plants as loco, and salt-bush. How we used to be disturbed by this smell in our car after collecting them!

Write for this bulletin,—you'll like it! And, by the way, there is also a U. S. Department of Agriculture Bulletin on Stock-Poisoning Plants, No. 1245.

—  —

A FASCINATING NEW BOOK, just out. TREE TRAILS and hobbies, by Ruth Cater is on the way to this library from The American Garden Guild. The publishers claim for it, "a warm and thrilling story by an author who has spent a lifetime in the wonderspots of the world studying trees". They tell us that "nothing has ever been published like it." It is a full treasury of tree lore; the whole absorbing story of over 200 American trees.

HELEN FOWLER

A TOP BOOK ON FLOWER ARRANGEMENT

REMEMBER the days of the tall, awkward vases on the piano, containers for milkweed, bittersweet and a few other flowers which nearly all women raised in their gardens? And the bouquets dreamed up, long before "Say it with flowers" came in? Nobody cared much how the flowers were arranged for no one mixed flowers then. Iris, peonies, roses, larkspur were used alone; one kind at one time and one kind to a vase with its top scalloped, fluted and flaring. Then later the artificial flowers came in style. I still run on to "home made" Tulips and Daffodils in set off parlors. No magazine articles and no books on how to arrange flowers had been written but all this time a new art was being born until one day, with a long story in between, a blue ribbon was given to an arrangement in shades of blue in an antique Chinese copper bowl. Flower arranging had arrived.

Today we have scores of books written by real artists—we have them all in our horticultural Library, by Hine, Burrough, Conway, Ferguson, many others. Tatsuo Ishimoto in his "The Art of Flower Arrangement" shows 150 photographs each designed for

many kinds of flowers. Then for a professional approach for the beginner Patricia Roberts in her Flower Craft covers wreaths, dried arrangements, bon voyage bouquets, flower etiquette and so much more. To learn the easy way to be an artist we have Dorothy Biddle and Dorothy Blom but for a real study source with actual practice exercises in design, scale, balance and all the other six basic principles, F. F. Rockwell and Esther Grayson have written The Complete Book on Flower Arrangement. Here for the first time found in any book is the discussion on the theory of color, a special chapter by nationally known experts with their special secrets, and arrangements for each month with flowers in season. Nothing so good has turned up yet.

In all of these books there is special advice on color and the color artist knows that if directly related colors are used for a close harmony great drama in all decoration can be created. By the study of the basic principles laid down in all of these books a clump of flowers may be changed into a living work of art.

HELEN FOWLER



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ANSWERS TO LETTERS AND TELEPHONE CALLS ON GARDEN QUESTIONS

SO many inquiries come in asking, "is it too late to do this, too late to do that." Now we know with certain bulbs we have no choice—they must be planted in the fall; minor bulbs should go in early while the major kinds may be planted as long as the ground remains open. Fall, perhaps, is better for Peonies and certain Lilies. Perennials put in too late are subject to those seesaw freezes and thaws. Our dry, cold winds too, often make it tough on late-set perennial plants.

* * *

One reader of the Green Thumb writes, "bellshaped flowers have a special attraction for me. Canterbury Bells are especially pretty but with their short life they do not seem appropriate for a perennial garden, what may I use in their place?"

Canterbury Bells need never be left out of a hardy border. Run them down through the center section and when finished blooming they may be lifted out without any noticeable loss. Why don't you try Peach Bells (*Campanula persicifolia*) — they are very hardy and long bloomers and start as early as the Peonies.

* * *

I am planning to construct a rock garden this fall, can I use tufa rock? B. H. Golden.

Yes, but I hope you will not use it in the sun where it looks dead because of its gray appearance. Used in moist shade, however, it gathers mosses and becomes as good looking as the moss-covered rock we usually use here in Colorado.

* * *

How far away from the center of a shrub do its roots extend? I ask this

question to avoid root injury in transplanting. William Gifford, Omaha.

Roots of trees and shrubs are figured to extend to the spread of the branches.

* * *

How is liquid fertilizer made without resorting to a troublesome barrel etc.? Will this fertilizer be beneficial to my house plants? Mrs. Lewis House, Pueblo, Colo.

Most house plants are grateful for this kind of feeding, given as often as once a month. To prepare in a simple way,—almost fill a two-gallon pail with water; add enough dry cow manure to fill one pound coffee can and to steep 12 or 14 hours—an over-night stand is about right. Apply only when soil around plants is moist. H. F.

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HORTICULTURAL NOMENCLATURE

Alpestris—of the mountains
 Amphibious—capable of living on land and in water
 While Aquatic means living in water,
 Aquatilis means living under water
 Aurantiacus—orange colored
 Bellum—beautiful
 Biferous—fruiting twice in a year
 Blade—the broad part of the leaf
 Caelestis—of a sky-blue color
 Campestris—belonging to the plains
 Capensis—of the cape, usually referring to the Cape of Good Hope
 Chlorophyll—the green coloring matter of leaves and stem
 Citrinus—of a lemon-yellow color
 Cilliated—fringed with hairs
 Claw—the narrow base of a petal
 Coccineus—scarlet
 Collinus—growing on low hills
 Cordate—heart shape

Crenate—scalloped
 Cuculate—hood-like
 Cyme—a broad, flattened, flower cluster, the inner flowers opening first
 Dealbatus—covered with an opaque white powder
 Deciduous—applied to plants which lose their leaves annually
 Dentate—having the margins toothed or divided into tooth-like incisions
 Dendrometer—an instrument used for measuring trees
 Flavus—pale yellow
 Fimbriate—fringed
 Fugacious—fading rapidly

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THE GREEN THUMB

GARDENING, AN ART AND A SCIENCE

By ALEX N. KLOSE

from "Rotary Tillage Talks", by Milwaukee Equipment Mfg. Co.

GARDENING is sometimes spoken of as an art and not as a science. To a certain extent this is at least partially correct, for it is generally known that given the same kind of plant, the same type of soil and the same kind of environment, one person will grow a plant better than a less informed grower.

Actually the methods employed may differ very little and consist chiefly in minor adjustments of the growth factors such as soil, moisture, temperature, light, plant nutrients, insect and disease control. Nevertheless, these differences, although small in themselves, materially affect the final development of a plant. This final result is brought about by a more or less sympathetic understanding of the growth requirements of a plant under varying conditions—an understanding, incidentally, acquired only after years of experience.

A gardener observes that a better or quicker result is obtained if a particular gardening practice is carried out in some particular way, and this knowledge stored often subconsciously, becomes a part of a general understanding of a cultivation of plants. This is an extremely slow and sometimes discouraging way of learning, one which consists in gaining knowledge from what are really unplanned, trial and error experiments. Most everyone has had some experience in this regard.

For example, if a root crop like beets, carrots, dahlias or glads ran "to top" because through experiments an overdose of nitrogen fertilizer was applied, thereby upsetting the balance of plant nutrients in the soil, and if in the future this excessive application

of nitrogen can be associated with a vigorous leaf growth, the gardener has learned by the trial and error method.

A knowledge acquired in this manner rests on a large number of half-remembered objectives, mostly unconnected and without any basis of comparison. It is a knowledge which, when it doesn't produce satisfactory results, is expressed by the saying, "I didn't have any luck growing that."

All of which makes it very evident that a clear, intelligently planned method of procedure should enable the gardener to arrive at the principles underlying the culture of all plants with a greater precision, and certainty, thus replacing the slow, very uncertain rule of thumb, or the "guess and by gosh" method.

This suggests that gardening is a complex science. In fact it might be said it is a combination of all sciences. A really good gardener should have some knowledge of chemistry, geology, pathology, bacteriology, biology, entomology, and just about every other "ology" found in the science books.

The aim of science as applied to gardening is to replace the hit and miss methods of procedure with something which is both more definite and at the same time more certain. It is a rule of science that a thing is not true until it can be repeated at will. This rule can be applied when a working knowledge of the growth factors is acquired.



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PROGRAM

For The Fourth Annual Rocky Mountain Horticultural Conference To be held in Denver University's new class room building on the Civic Center, January 2 and 3, 1951.

Tuesday Morning, January 2

Dr. A. C. Hildreth, Chairman

- 9:00—Registration.
- 9:45—Welcome by President Mrs. John Evans.
Announcements
- 10:00—"Make and Use Compost for Better Lawns and Gardens," by a Panel of Experts.
- 10:45—Intermission of half hour.
See Exhibits, Garden Clinic and Movies.
The garden clinic will have experts on plant diseases, insect pests and cultural problems. Discuss your questions with them at any intermission.
- 11:15—Professional Section.
"Plant Breeding Possibilities and Techniques for Western Horticulture," by S. W. Edgecombe of Utah State College.
- 11:15—Amateur Section.
"Planning Your Garden in The Rocky Mountains," by Mrs. K. N. Marriage of Colorado Springs.
- 12:15—Luncheon Hour

Tuesday Afternoon

Professor A. M. Binkley, Chairman

- 1:30—"Bees, Flowers and Plant Breeding," by S. W. Edgecombe of Utah State College.
- 2:30—Intermission.
- 3:00—Professional Section.
"Weed, Insect and Disease Control by Chemicals." by Wm. Van Pelt of the General Chemicals Corp.
- 3:00—Amateur Section.
Rose Symposium given by Members of the Home Garden Club.
- 6:30—Buffet Dinner at D.U. Building.
Brief business session.
New films by Alfred Bailey of the Denver Museum of Natural History.

Wednesday Morning, January 3

Fred Johnson, Chairman

- 9:30—Announcements.
- 9:45—"Weed Control for Everyone," by W. F. Cherry of Rohm and Haas Co.
- 10:15—"Making Our Highways Attractive," Pictures shown by Sam Huddleston.
- 10:45—Intermission.
- 11:15—Professional Section.
"Tree Selection and Placing Problems in a Growing City," by Representatives from the City Forester's Office and the Public Service Co.
- 11:15—Amateur Section.
"Control of Insects in Home Gardens," by Wm. Van Pelt of the General Chemical Corp.
- 12:15—Luncheon Hour.

Wednesday Afternoon

- 1:30—Outdoor Demonstrations of Sprayers, Power Saws and Other Tools.
Contests of Skill Among Arboriculturists.

GARDENING IN DECEMBER

THE active work of caring for growing plants may be over for the season, but there are still things to be done that will keep the thumb green. Some trimming may be done, house plants require attention, there are Christmas decorations to arrange and lots of fine garden books to read.

I still see the overly neat gardeners out with the hose washing leaves off the lawn. It worries me to see this for it not only wastes water but seriously damages the lawn by also washing off all the valuable mulch from the surface of the soil. If all the leaves **MUST** be kept off the lawn a bamboo rake is much more efficient.

When the weather is not too cold it is a good time to get the trees trimmed and scraggly limbs cut from the shrubs. Trees that have outlived their usefulness may be efficiently taken out now. Evergreens and shrubs that are tall and limber should be braced to prevent snow damage. Low evergreens that are under the eaves should be protected to prevent snow breaking them down.

If roses have not been hilled up it should be done now. If the soil around them is frozen bring in some from the vegetable bed or some other vacant place. Climbing roses may be given some shade to prevent a sunburn. Tender barked young trees should be wrapped. Be sure that the ground around everything is wet when it freezes up.

House plants should be getting adjusted to the indoor conditions and be blooming. Check again for insects. Find out the habits of each plant and give it the temperature and water that it likes. Most house plants like more humidity in the air than is found in the average home. A teakettle on an electric plate steaming for a few hours a day will help.

Surely there are some things in the garden that will help to make cheerful Christmas decorations. Coralberries, snowberries, barberries, hawthorns and cotoneaster are all good. Sprays of juniper and pine from the necessary trimmings may be attractively arranged. Put some evergreen boughs and some artificial red berries in the barren window boxes.

If there are evergreen trees in appropriate places arrange to decorate them with Christmas lights and ornaments. Start a bird-feeding station in one of the evergreens. They will learn to come to it in bad weather.

There are classes in various phases of gardening offered by the schools, universities and Horticulture House. There are books available in the library at Horticulture House that will help in your next year's gardening and will be interesting reading now. Let us help you plan your reading and study.

Talk to your neighbor about the work of this Association and show them how they can get help for their garden problems.



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